Volume 157 January-June 1980

NATIONAL GEOGRAPHIC

INDEX

January-June 1980

VOLUME 157

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D. C.

NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

Organized "for the increase and diffusion of geographic knowledge"

GILBERT HOVEY GROSVENOR
Editor, 1899-1954; President, 1920-1954
Chairman of the Board, 1954-1966

THE NATIONAL GEOGRAPHIC SOCIETY is chartered in Washington, D. C., in accordance with the laws of the United States, as a nonprofit scientific and educational organization. Since 1890 the Society has supported 1,817 explorations and research projects, adding immeasurably to man's knowledge of earth, sea, and sky. It diffuses this knowledge through its monthly journal, NATIONAL GEOGRAPHIC; its books, globes, atlases, filmstrips, and educational films; *National Geographic WORLD*, a magazine for children age 8 and older; information services; technical reports; exhibits in Explorers Hall; and television.

ROBERT E. DOYLE, President
GILBERT M. GROSVENOR, Vice President
OWEN R. ANDERSON, Vice President and Secretary
HILLEARY F. HOSKINSON, Vice President and Treasurer
WILLIAM T. BELL, LEONARD J. GRANT,
JOSEPH B. HOGAN, ADRIAN L. LOFTIN, JR.,
LEWIS P. LOWE, RAYMOND T. McELLIGOTT, JR.,
C. VERNON SANDERS, EDWIN W. SNIDER
Associate Secretaries

BOARD OF TRUSTEES

MELVIN M. PAYNE, Chairman of the Board
LLOYD H. ELLIOTT, Vice Chairman
President, George Washington University
MELVILLE BELL GROSVENOR, Chairman Emeritus
THOMAS W. McKNEW, Advisory Chairman

THOMAS E. BOLGER
Executive Vice President, American Telephone & Telegraph Company
FRANK BORMAN, Chairman of the Board and President, Eastern Airlines
J. CARTER BROWN, Director, National Gallery of Art
WARREN E. BURGER
Chief Justice of the United States
ROBERT E. DOYLE, President, National Geographic Society
GEORGE M. ELSEY, President, American Red Cross
GILBERT M. GROSVENOR
Editor, National Geographic
ARTHUR B. HANSON, General Counsel, National Geographic Society
CARYL P. HASKINS, Former President, Carnegie Institution of Washington
JEROME H. HOLLAND
Former U.S. Ambassador to Sweden
CARLISLE H. HUMELSINE
Chairman of the Board, The Colonial Williamsburg Foundation
MRS. LYNDON B. JOHNSON
CURTIS E. LeMAY, Former Chief of Staff, U. S. Air Force
WM. McCHESNEY MARTIN, JR.
Former Chairman, Board of Governors, Federal Reserve System
LAURANCE S. ROCKEFELLER
President, Rockefeller Brothers Fund
ROBERT C. SEAMANS, JR.
Dean of the School of Engineering, Massachusetts Institute of Technology
JAMES H. WAKELIN, JR., Former Assistant Secretary of Commerce for Science and Technology
JAMES E. WEBB, Former Administrator, National Aeronautics and Space Administration
CONRAD L. WIRTH, Former Director, National Park Service

Trustees Emeritus

CRAWFORD H. GREENEWALT
JUAN T. TRIPPE
FREDERICK G. VOSBURGH
LOUIS B. WRIGHT

COMMITTEE FOR RESEARCH AND EXPLORATION

MELVIN M. PAYNE, Chairman
T. DALE STEWART, Vice Chairman
EDWIN W. SNIDER, Secretary

BARRY C. BISHOP, ROBERT E. DOYLE, GILBERT M. GROSVENOR, MELVILLE BELL GROSVENOR, CARYL P. HASKINS, STERLING B. HENDRICKS, Scientist Emeritus, U. S. Department of Agriculture, THOMAS W. McKNEW, BETTY J. MEGGERS, Research Associate-Anthropology, Smithsonian Institution, CHARLES H. SOUTHWICK, Professor of Biology, University of Colorado, GEORGE E. STUART, JAMES H. WAKELIN, JR., GEORGE E. WATSON, Curator of Birds, Smithsonian Institution, FRANK C. WHITMORE, JR., Research Geologist, U. S. Geological Survey, CONRAD L. WIRTH, LOUIS B. WRIGHT, and PAUL A. ZAHL

ASSISTANT SECRETARIES OF THE SOCIETY: Frederick C. Gale, James P. Kelly, Ward S. Phelps, Cletis Pride

ASSISTANT TREASURER: Alfred J. Hayre. *Assistants to the President:* Earl Corliss, Jr., Richard E. Pearson. *Administrative:* D. Evelyn Carnahan, Janet C. Soper

SECRETARY'S STAFF: *Accounting:* Dorothy L. Dameron, Jay H. Givans, Laura L. Leight, William G. McGhee, George E. Newstedt, David H. Peters. *Administration:* Ruth E. Clark, Robert V. Koenig, Zbigniew Jan Lutyk, Ross L. Mulford, Joyce S. Sanford, Karen F. Shrewsberry, Nell G. Snow, Frank M. Twigger. *Computer:* James G. Schmelzer, William L. Chewning, Ronald C. Kline, Richard A. Mechler. *Educational Services:* Wendy G. Rogers, Dean R. Gage, Carl W. Harmon, Jr. *Employee Benefits:* Howard R. Hudson, Mary L. Whitmore. *Explorers Hall:* Peter Purpura. *Membership Services:* Margaret L. Bassford, Robert C. Dove, Erma T. Goetzinger, William T. McDonnell, Jimmie D. Pridemore, Charles P. Thomas, Paul B. Tylor, Dorothy M. Wagner, Marguerite M. Wise, Peter F. Woods. *Personnel:* Thomas L. Hartman, M.D., Robert E. Howell, Glenn G. Pepperman, Shirley N. Wilson. *Printing:* Joe M. Barlett, Frank S. Oliverio, Margaret A. Slifer, Hans H. Wegner. *Promotion:* Charles T. Kneeland, Robert J. Warfel, Eileen W. Bowering, James R. Dimond, Jr., Robert L. Feige, Joseph S. Fowler, Thomas M. Kent, F. William Rath, Towne Windom. *Purchasing:* Robert G. Corey, Thomas L. Fletcher, Sheila H. Immel

ADVERTISING: *Director:* James L. Till, 1251 Avenue of the Americas, New York 10020. *Asst. to Dir.:* Blanche Coffey. *Assoc. Sales Director:* George W. Kellner. *Managers—East:* Bart W. McDonnell, New York. *Midwest:* Robert R. Henn, Chicago. *San Francisco:* Cecil H. London. *Los Angeles:* Richard H. Lehman. *Detroit:* George E. Moffat. *International Editions:* Robert W. Horan, New York. *Travel:* Gerald A. Van Splinter, New York. *Europe:* Michel A. Boutin, Paris. *Business Manager:* Peter W. Michaels. *Production Manager:* G. Sarita Lapham

COPYRIGHT © 1980 National Geographic Society, 17th and M Sts. N.W., Washington, D. C. 20036.

MELVIN M. PAYNE *Chairman of the Board*
ROBERT E. DOYLE *President of the Society*
MELVILLE BELL GROSVENOR *Editor Emeritus*

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT M. GROSVENOR *Editor*
W. E. GARRETT *Associate Editor, Illustrations*
JOSEPH JUDGE *Associate Editor, Text*

SENIOR ASSISTANT EDITORS

James Cerruti, *Contract Writers* Richard J. Darley, *Cartography*
Robert E. Gilka, *Photography* William Graves, *Expeditions*
Robert P. Jordan, *Special Projects* Edward J. Linehan, *Manuscripts*
Samuel W. Matthews, *Production* O. Louis Mazzatenta, *Layout*
Howard E. Paine, *Art* Carolyn Bennett Patterson, *Legends*
Thomas R. Smith, *Illustrations* Kenneth F. Weaver, *Science*
Ann K. Wendt, *Research* Herbert S. Wilburn, Jr., *Control Center*

TEXT

ASSISTANT EDITORS: Rowe Findley, Allan C. Fisher, Jr., Bart McDowell, Elizabeth A. Moize, Merle Severy
SENIOR WRITERS: Thomas J. Abercrombie, David S. Boyer, Mike Edwards, William S. Ellis, Howard La Fay, John J. Putman, Volkmar Wentzel, Peter T. White
SENIOR EDITORIAL STAFF: Harvey Arden, Kent Britt, Thomas Y. Canby, Boyd Gibbons, Rick Gore, Noel Grove, Alice J. Hall, Bryan Hodgson, David Jeffery, Michael E. Long, Ethel A. Starbird, Priit J. Vesilind, Gordon Young
EDITORIAL STAFF: Robert Booth, John L. Eliot, Larry Kohl, John L. McIntosh, George E. Stuart
RESEARCH: Frances H. Parker (Associate Chief); Carolyn H. Anderson, Susan L. Anderson, Judith Brown, Susan P. Byrnes, Susan Day Fuller, Ann B. Henry, Jan Holderness, Patricia B. Kellogg, Kathy B. Maher, Jean B. McConville, Jeanne E. Peters, Lesley B. Rogers, Frances W. Shaffer. *Style:* Michaeline A. Sweeney. *Geographic Information:* Bette Joan Goss. *Legends:* Abigail A. Tipton

ILLUSTRATIONS

PHOTOGRAPHERS: Dean Conger, Joseph J. Scherschel (Assistant Directors); James L. Amos, Joseph H. Bailey, James P. Blair, Victor R. Boswell, Jr., Jodi Cobb, Bruce Dale, Gordon W. Gahan, David Alan Harvey, Otis Imboden, Emory Kristof, Joseph D. Lavenburg, Bianca Lavies, Bates Littlehales, Robert W. Madden, George F. Mobley, Robert S. Oakes, Steve Raymer, Robert F. Sisson *(Natural Science)*, James L. Stanfield. *Administration:* Claude E. Petrone, Susan A. Smith
ILLUSTRATIONS EDITORS: Allan Royce (Asst. Director); David L. Arnold, Taylor Gregg, Declan Haun, Bruce A. McElfresh, Charlene Murphy, Robert S. Patton, Elie S. Rogers, Jon Schneeberger, Mary Griswold Smith *(Research Projects)*
LAYOUT: Constance H. Phelps
ART: William N. Palmstrom, J. Robert Teringo (Associate Directors); Walter Q. Crowe, John D. Garst, Jr. (Assistant Directors); Elie Sabban (Production). *Artists:* Lisa Biganzoli, William H. Bond, John W. Lothers, Ned M. Seidler. *Map Editors:* John T. Blozis, Gus Platis. *Research:* Virginia L. Baza, Harold A. Hanson (Supervisors); Ross M. Emerson, Margaret Deane Gray, Dorothy A. Nicholson. *Map Artists:* Isaac Ortiz, Leo B. Zebarth (Supervisors); Iskandar Baday, Peter J. Balch, Snejinka Stefanoff, Alfred L. Zebarth
DESIGN: Charles C. Uhl, Robert E. Pullman, Betty A. Clayman
ENGRAVING AND PRINTING: William W. Smith (Director); James R. Whitney (Associate Director); Bill M. Aldridge, John T. Dunn, John R. Metcalfe

CARTOGRAPHY

John F. Shupe (Associate Chief); Ted Dachtera, Richard K. Rogers (Assistant Chiefs); John F. Dorr (Art Director); Margery K. Barkdull, Charles F. Case, Henri A. Delanghe, Russel G. Fritz, Charles W. Gotthardt, Jr., Thomas L. Gray, Catherine M. Hart, Donald A. Jaeger, Harry D. Kauhane, Mary C. Latham, Mary Anne McAleer, Charles L. Miller, Roland R. Nichols, Robert W. Northrop, Charles L. Stern, Douglas A. Strobel, Tibor G. Toth, Thomas A. Wall, Thomas A. Walsh

EDITORIAL SERVICES

ADMINISTRATION: Joyce W. Graves (Assistant to the Editor), Elaine Rice Ames, Marie L. Barnes, G. Merrill Clift, Neva M. Collins, Lilian Davidson, Virginia H. Finnegan, Eleanor W. Hahne, Mary F. Klemann, Lucille L. McInerney, Shirley Neff, Patricia M. Oakes, Barbara A. Shattuck, M. Jean Vile, Barbara L. Wyckoff. *Correspondence:* Carolyn F. Clewell, Clifford R. DuBois. *Indexes:* Jolene M. Blozis. *Travel:* Virginia A. Bachant
PHOTOGRAPHIC LABORATORIES AND TYPESETTING: Carl M. Shrader (Chief); Milton A. Ford (Associate Chief); Lawrence F. Ludwig (Assistant Chief); Herbert Altemus, Jr., Billy R. Barnett, Richard A. Bredeck, David H. Chisman, Ellwood M. Kohler, Jr., Geoffrey T. McConnell, Arletta M. Molinari, William S. Petrini, Bernard G. Quarrick, Joan S. Simms, Alfred M. Yee
LIBRARIES: *Publications:* Virginia Carter Hills (Librarian); Patricia Murphy Smith, Carolyn Locke, Louise A. Robinson, Susan Fifer Schutt, Marta Strada. *Illustrations:* L. Fern Dame, Carolyn J. Harrison. *Records:* Lorie Northrop, Mary Anne McMillen. *Films:* Betty G. Kotcher

RELATED EDUCATIONAL SERVICES OF THE SOCIETY

SENIOR ASSISTANT EDITORS

Robert L. Breeden, *Special Publications and School Services*
Charles O. Hyman, *Book Service*

BOOK SERVICE: Thomas B. Allen, Seymour L. Fishbein (Associate Chiefs); Ross Bennett, Constance Brown Boltz, Mary H. Dickinson, Karen F. Edwards, Robert C. Firestone, Anne Dirkes Kobor, J. Edward Lanouette, Carol Bittig Lutyk, Linda B. Meyerriecks, David F. Robinson, Shirley Scott, Margaret Sedeen, Verla Lee Smith
SPECIAL PUBLICATIONS AND SCHOOL SERVICES: Donald J. Crump (Associate Chief); Philip B. Silcott (Assistant Chief); William L. Allen, Jody Bolt, Toni Eugene, Ron Fisher, William R. Gray, Barbara Grazzini, Sallie M. Greenwood, Mary Ann Harrell, Suzanne J. Jacobson, Bonnie S. Lawrence, Geraldine Linder, Tee Loftin, Louisa V. Magzanian, Tom Melham, Robert Messer, Cynthia Ramsay, Jennifer C. Urquhart, Ursula Perrin Vosseler, George V. White, Merrill Windsor. *National Geographic WORLD:* Ralph Gray (Editor); Ellen Joan Hurst, Margaret McKelway, Pat Robbins, Eleanor Shannahan, Veronica Smith. *Educational Media:* George Peterson (Editor); Jimmie Abercrombie, James B. Caffrey, Margery G. Dunn, Jacqueline Geschickter, Jane R. McCauley, H. Robert Morrison, Judith E. Rinard
NEWS SERVICE: Paul Sampson (Chief); Donald J. Frederick, Barbara S. Moffet, William J. O'Neill, Robert C. Radcliffe. **TELEVISION AND EDUCATIONAL FILMS:** Dennis B. Kane (Chief); Marjorie M. Moomey *(Research)*; Patricia F. Northrop *(Promotion)*; Sidney Platt *(Educational Projects)*; Donald M. Cooper, Anne B. K. Krumbhaar, Yeorgos N. Lampathakis, Louise C. Millikan, Nola L. Shrewsberry, Carl E. Ziebe. **LECTURES:** Joanne M. Hess (Chief); Ronald S. Altemus, Robert G. Fleegal, Mary W. McKinney, Gerald L. Wiley. **RECORDINGS:** John M. Lavery (Chief). **AUDIOVISUAL:** Jon H. Larimore

Contents

Page

JANUARY 1980

EDITOR'S PAGE 1

WHAT VOYAGER SAW: JUPITER'S DAZZLING REALM 2
By Rick Gore, with photographs by NASA

LONG-EARED OWLS—MASTERS OF THE NIGHT 31
Article and photographs by Art Wolfe

THE TALLGRASS PRAIRIE: CAN IT BE SAVED? 37
By Dennis Farney, with photographs by Jim Brandenburg

HOKKAIDO, JAPAN'S LAST FRONTIER 62
By Douglas Lee, with photographs by Michael S. Yamashita

UTAH'S ROCK ART: WILDERNESS LOUVRE 97
By Gary Smith, with Michael E. Long

BERBER BRIDES' FAIR 119
By Carla Hunt, with photographs by Nik Wheeler

LIFE AROUND A LILY PAD 131
Photographs by Bianca Lavies, with text by Charles R. Miller

FEBRUARY 1980

EDITOR'S PAGE 143

THE PESTICIDE DILEMMA 145
By Allen A. Boraiko, with photographs by Fred Ward

TUNISIA: SEA, SAND, SUCCESS 184
By Mike Edwards, with photographs by David Alan Harvey
Double supplement included—*Africa* and *Africa, Its Political Development*

IN LONG-FORBIDDEN TIBET 218
Article and photographs by Fred Ward (Black Star)

THE WHITE MOUNTAIN APACHE
I. AT PEACE WITH THE PAST, IN STEP WITH THE FUTURE 260
By Ronnie Lupe
II. COMING OF AGE THE APACHE WAY 262
By Nita Quintero, with photographs by Bill Hess
III. SEEKING THE BEST OF TWO WORLDS 272
Article and photographs by Bill Hess

MARCH 1980

EDITOR'S PAGE 291

JOURNEY TO CHINA'S FAR WEST 292
By Rick Gore, with photographs by Bruce Dale

HOME TO NORTH CAROLINA 333
By Neil Morgan, with photographs by Bill Weems

GREECE: "TO BE INDOMITABLE, TO BE JOYOUS" 360
By Peter T. White, with photographs by James P. Blair

DECEPTION: FORMULA FOR SURVIVAL 394
Article and photographs by Robert F. Sisson

BALI CELEBRATES A FESTIVAL OF FAITH 416
Photographs by Fred and Margaret Eiseman, with text by Peter Miller

TREASURE FROM A CELTIC TOMB 428
By Jörg Biel, with photographs by Volkmar Wentzel

Page

APRIL 1980

EDITOR'S PAGE 439
TEXAS! 440
By Howard La Fay, with photographs by Gordon W. Gahan
RETURN TO ESTONIA 485
By Priit J. Vesilind, with photographs by Cotton Coulson
OURSI, MAGNET IN THE DESERT 512
Article and photographs by Carole E. Devillers
BRITISH COLUMBIA'S COLD EMERALD SEA 526
Photographs by David Doubilet, with text by Larry Kohl
WASHINGTON CATHEDRAL: "HOUSE OF PRAYER FOR ALL PEOPLE" 552
By Robert Paul Jordan, with photographs by Sisse Brimberg
TEMPLE MONKEYS OF NEPAL 575
By Jane Teas

MAY 1980

EDITOR'S PAGE 585
THE ST. LAWRENCE RIVER: CANADA'S HIGHWAY TO THE SEA 586
By William S. Ellis, with photographs by Bruce Dale
Double supplement included—*Close-up: Canada: Quebec and Newfoundland*
A WALK IN THE DEEP 624
By Sylvia A. Earle, with photographs by Al Giddings and Chuck Nicklin
THAILAND: REFUGE FROM TERROR 633
By W. E. Garrett
ONE FAMILY'S ODYSSEY TO AMERICA 642
Text and photographs by John Everingham
LONG ISLAND'S QUIET SIDE 662
By Jane Snow, with photographs by Sam Abell
JARI: A BILLION-DOLLAR GAMBLE 686
Article and photographs by Loren McIntyre
CHEETAHS: IN A RACE FOR SURVIVAL 712
Article and photographs by George W. and Lory Herbison Frame

JUNE 1980

EDITOR'S PAGE 729
THE MYSTERY OF THE SHROUD 730
By Kenneth F. Weaver
HEART OF THE CANADIAN ROCKIES 757
By Elizabeth A. Moize, with photographs by Jim Brandenburg
THE MEXICAN AMERICANS: A PEOPLE ON THE MOVE 780
By Griffin Smith, Jr., with photographs by Stephanie Maze
CHINCOTEAGUE: WATERMEN'S ISLAND HOME 810
By Nathaniel T. Kenney, with photographs by James L. Amos
LIVNG WITH THE GREAT ORANGE APES: INDONESIA'S ORANGUTANS 830
By Biruté M. F. Galdikas, with photographs by Rod Brindamour
MISSISSIPPI'S GRAND REUNION AT THE NESHOBA COUNTY FAIR 854
By Carolyn Bennett Patterson, with photographs by C. C. Lockwood

Index VOLUME 157 JANUARY-JUNE 1980

January	pp. 1-142	April	pp. 439-584
February	pp. 143-290	May	pp. 585-728
March	pp. 291-438	June	pp. 729-866

Titles and illustrations in bold face

A

Abacus: China 305, 310
Abell, Sam, photographer: ***Long Island's Quiet Side.*** May, 662-665
Abolitionist: Henry Ward Beecher 52
Abourezk, James 221
Accomack County, Va.: Old personal names 817; *see also* Chincoteague Island, *outlined*
Acropolis (ruins), Athens, Greece **365-367**
Adaptation, animal: Insect camouflage and mimicry 398-399, **400-401**
Adkisson, Perry 151, 156
Aegean Islands, Greece 371, **374-375,** 387; Greek–Turkish dispute 386-387
Aegean Sea, and region *see* Greece
Africa: ***Africa; Africa, Its Political Development.*** Feb. supplement; Wildlife: ***Cheetahs: In a Race for Survival.*** By George W. and Lory Herbison Frame. May, 712-728; *see also* Morocco; Oursi, Upper Volta; Tunisia
Agent Orange (defoliant) 178
Agrebi, Ltaief 198
Agriculture: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711; ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183; *see also* Cattle; cattle raising; Sheep; *and* China, Estonia, Greece, Hokkaido, Long Island, N. Y., North Carolina, Texas, Tibet, *for* Agriculture; Farms and farming
Agung, Gunung (volcano), Bali, Indonesia 416; Eruption 419
Aicha (Berber) **122,** 122-123
Ainu (people) 65; Culture preservation 73; History 71
Air pollution: Artwork and: Marble decay 367, Rock art decay, threat of 101; Kohtla-Järve, Estonia 507; Lanzhou, China 311, 318
Airplanes: Agriculture, used in: Crop-spraying airplanes **146-147,** 150, **150,** 163, 166, 167, **174-175,** wing-design research 152-153, model **152-153;** Rice planting 460, 694, 705
Ait Hadiddou (Berber tribe): ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129
Akwesasne St. Regis Indian Reservation, Canada 610
The Alamo, siege of (1836) 445 map note, 450, 451; Survivors, execution of 451
Albee, Edward 669, **671**
Alberta, Canada: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779
Aliens, illegal: United States 786, 798, Mexicans 477, 478, 480, **790,** 797-798, 800-801
Alimonzo, Issoufi 512, 514, 518, 525
Allabedi (Kazak) **326,** 330-331
Allen, Roxanne **672**
Almond orchards: Pesticide use 148, 163
Alsea, Oreg.: Forest **182-183;** Herbicide spraying, miscarriage and 178, 182
Alston, H. Lowell **355**
Alviso (community), San Jose, Calif. **804-805**
Amagansett, N. Y. 665, 682; Fish market **667**
Amalthea (Jovian satellite) 11, **11;** Voyager flyby 13
Amarillo, Texas: Copper refinery 470; Feedlot industry **442-443,** 445 map note, 470
Amazon Basin: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
American hostages in Iran: Interfaith service for **570**
American Tobacco Company 354
Ames, Bruce N. 179
Ames test (carcinogen–detection test): Bacteria, use of 179
Ammar, Hassib Ben 207
Ammar, Thibab Ben 184
Amos, James L., photographer: ***Chincoteague: Watermen's Island Home.*** June, 810-829
Amphibians: ***Life Around a Lily Pad.*** By Bianca Lavies. Jan., 131-142
Anasazi rock art: Basket Maker **112-113;** Dated 105; Pueblo, possible **114,** 115
Anderson Hospital, Houston, Texas *see* M. D. Anderson
Andrade, José Júlio 699
Angelina National Forest, Texas 461
Animal behavior *see* Cheetahs; Long-eared owls; Orangutans; Rhesus monkeys; *and* Mimicry
Animal communication: Orangutans **838, 839,** 845, 846, 849
Animal introduction: Boll weevil 151; Fire ant 160, 170; Gypsy moth 148
Animal Kingdom, Hamanaka, Hokkaido (island), Japan 76, **84-85,** 85
Animal migration: Eels 620; Gazelles 718, 728; *see also* Bird migration
Animal mimicry: ***Deception: Formula for Survival.*** By Robert F. Sisson. Mar., 394-415
Animals: Laboratory animals: Chemical-exposure tests 157, 179, 181, 182; *see also* Birds; Fishes; Insects; *and* Mammals *by name*
Anoyia, Greece **390-391;** Nazi atrocities 391
Anticosti, Ile d', Canada: Salmon fishing 619
Antonio, Rennie **290**
Ants **394, 399;** Fire ants 157, 160, 170, **170-171,** control attempts 160, 161, **170-171,** predator, beneficial 160-161, **171;** Mimic and model **395**
Apache: ***The White Mountain Apache.*** Feb., 260-290
I. ***At Peace With the Past, In Step With the Future.*** By Ronnie Lupe. 260-261
II. ***Coming of Age the Apache Way.*** By Nita Quintero. 262-271
III. ***Seeking the Best of Two Worlds.*** By Bill Hess. 272-290
Arrival in Southwest 278
Dispersion 278
History 260, 275, 277, 278-279
Horsemanship 275
Matricentric loyalty 269
Name, tribal 278; "Apache," origin of 278
Nations 261
Number, sacred 269, 285, 289
Reservations 261; Maps 261, 276; *see also* Fort Apache Reservation, *outlined*
White man, earlier relations with 260, 275, 277, 278-279
see also White Mountain Apache, *outlined*
Apache scouts (1870s) 278
Apples: Crab apples **230**
Aquiculture: Chincoteague Island, Va.: Oyster farming 812, 817-818, 820
Arakhova, Greece: Festival **360-361**
Archaeology: Carthage, Tunisia 199, 201, finds 201; Shroud of Turin: Study of 729, ***The Mystery of the Shroud.*** By Kenneth F. Weaver. June, 730-753; ***Treasure From a Celtic Tomb.*** By Jörg Biel. Mar., 428-438
Archaic Period (Americas): Figure, stone **104**
Architecture: Gothic architecture:

Washington Cathedral: "House of Prayer for All People." By Robert Paul Jordan. Apr., 552-573; Greek classical **366-367, 377;** Medieval architecture: Tallin, Estonia **486-487,** 491, **510-511;** "rammed earth" architecture: China 304, 317; Renaissance cathedral: Turin, Italy **733**
Arizona: Mexican Americans 784, 786, **803;** Water, pesticide-contaminated 177; *see also* Fort Apache Reservation
Armband, gold: Celtic tomb 430, **434,** 438
Arredondo, Lupe **177**
Art, primitive: ***Utah's Rock Art: Wilderness Louvre.*** By Gary Smith, with Michael E. Long. Jan., 97-117
Artists; artisans: ***Washington Cathedral: "House of Prayer for All People."*** By Robert Paul Jordan. Apr., 552-573; *see also* Cloutier, Pier
Arts and crafts: Decoy artwork 819, **826, 827;** Dough art, Balinese **424, 425;** Furniture making **358-359;** *see also* Art, primitive; Folk arts and crafts; Mosaics; Stained glass
Arzigal (Uygur) 321-322
Asahi, Mount, Hokkaido (island), Japan 67; Skiers **76-77**
Asheville, N. C. 354; Historic homes; estates 354
Asia: Wildlife *see* Orangutans; *see also* China, People's Republic of; Japan; Southeast Asia; Tibet
Assassin bug **168;** Pest control and 168
Assateague Channel, Va. **814-815,** 817, 826
Assateague Island, Md.–Va.: ***Chincoteague: Watermen's Island Home.*** By Nathaniel T. Kenney. June, 810-829
Accessibility 822, 823
Horses, semiwild **823,** 828, **828,** 829; Breed 829; Breeding, improved 829; Origin, possible 812, 822, 828
Ponies *see* Horses, *above*
Preserves, national 812, 822-823, **824-825,** 829
Vegetation **822-823,** 828, 829
Wildlife *see* Chincoteague National Wildlife Refuge
Assateague Island National Seashore, Md.–Va. 812, 822
Astana, China 324-326
At Peace With the Past, In Step With the Future (Apache). By Ronnie Lupe. Feb., 260-261
Athabasca Glacier, Alberta, Canada 769; Formation 769; Meltwater channel **760**
Athens, Greece: Employment, two-job 360, 380; History, ancient 377; Markets 380, 381, kiosks 381, **381;** Parliament Building **369;** Population 360, 371, growth (1920-) 380; Ruins **365-367**
Athos, Mount (theocratic republic) 370, **382, 383**
Atom: Photographing of 1
Atom smasher *see* Particle accelerator
Auction, foal: Chincoteague Island, Va. **814, 815,** 828, 829, Humane Society supervised 829
Auctioneer, tobacco: Wilson, N. C. **356**
Augustine, St. 198
Auroras: Jupiter 11, 17
Austin, Stephen F. 450
Austin, Texas 476; Texan culture 476-477
Automobiles: Customized: "low-riders" 800, **806-807;** 1936 Packard convertible **665;** Russian-built **486**
Automobiles, junked: Cadillac monument of: Amarillo, Texas 470, 474
Ayers, Eloise 354
Aziz (Uygur) 325-326

B

Baccar, Hajji Ammar 188
Baghmati River, Nepal: Pashupati temple **578-579**
Baghy, Audrey de 763
Baie-Comeau, Canada 619; Paper mill 619, annual production 619
Baima Zhuoga 254, 259
Baker, John 349
Baker, Sim 817
Bali Celebrates a Festival of Faith. By Fred and Margaret Eiseman. Mar., 416-427
Balinese deities 419, **425**
Balish, Sarah **277**
Balkan Wars: Greek territory and 374
Ballance, Henry 341
Ballard, Robert D. 1
Ballestrero, Anastasio **732,** 749
Baltic States: Annexed by Soviet Union (1940) 490 map note; *see also* Estonia, *outlined*
Bamboo coral 628, **630,** 631, **631**
Bamboo towers: Indonesia **421**
Ban Nam Chan, Laos 646, **646,** 647
Ban Vinai (refugee camp), Thailand 643, 645, **647-649;** Maps locating 634, 646
Banff, Canada: Aerial view **770-771**
Banff National Park, Canada: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779
Accommodations: Hotels 763, 767; Map 762
History 762, 763
Map 762
Overcrowding 760, 774
Skiing 763, 771, **771;** Gondola-lift construction **773;** Summer training **774**
Sulfurous springs 763
Trails 763
Vehicles, unauthorized 763, 766
Visitors, number of 760, 762, 767
Wildlife 760, **764,** 766, 773
see also Louise, Lake
Banff Springs Hotel, Canada 763, 769
Baobab tree: Leaves **515,** sauce made from 515, 518
Baptist church, largest in U. S. 468
Barbet, Pierre 747
Barley: Tibet 231, 249, harvesting 248, **256-257**
Barrett, Julia **861**
Barrier Canyon, Utah: Name, official 101
Barrier Canyon rock-art style 97, 101, 105; Examples **98-103, 105**
Barry, Robert 490
Bartko, Bohdan 624, 628, 629
Basket Maker figures: Rock art **112-113**
Basket weaving: Apache 287
Baskin, Jeannine **167**
Basques: Canada, exploration of 610; Whaling 610, 623
Bates, Henry Walter 406, 407
Bath, N. C. 341
Bathing: American Indian steam bathing **284-285,** 289; Japanese **77,** 78, 79, **80-81**
Baugniet, Florenz 657
Bayless, John H. **564**
Baz, Farouk El- 298, 3?6
Beach club: Westhampton Beach, N. Y. **678-679**
Beadwork: Apache **263-269,** 269
Bears: Canada 760, 766; Hokkaido (island), Japan 76, 85
Beaumont, Texas: Oil well, historic 460-461
Beauvoir School, Washington Cathedral 562
Beebe, Reta 28
Beecher, Henry Ward 52
Beecher Bible and Rifle Church, Wabaunsee, Kans. **53**
Beehive tomb: Imilchil, Morocco **121**
Bees *see* Honeybees
Beetles: *Donacia* beetle 139, **139**
Beijing, China 299, 300; Cathedral 331, communion **330,** confession **331;** Department-store display **301**
Beiradão, Brazil 695, **708;** Aerial view **706;** Commuter boats **708;** Government supervision 695; Lifestyle 695, 708
Beiradinho, Brazil **709**
Belk, John Montgomery 352
Bell, Tibetan ritual **224**
Bella (people): Oursi, Upper Volta 514, 519, **519, 524-525**
Belt, gold-ornamented: Celtic tomb 430, **434,** 438
Beluga whales: St. Lawrence River, Canada–U. S. 616, overhunting 616
Ben Miled, Farouk and Jelila **194**
Berbers: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129; Tunisia 188, 193, 210, 213

Berry, Joseph A. **345**
Besakih temple compound, Bali, Indonesia: ***Bali Celebrates a Festival of Faith.*** By Fred and Margaret Eiseman. Mar., 416-427
Betz, Robert 42, **45,** 52, 59-61
Bible, King James: Original copy 559, 566
Biel, Jörg: ***Treasure From a Celtic Tomb.*** Mar., 428-438
Bier, bronze: Celtic tomb **428-429,** 430, **431,** 433, **436-437,** 438
Bigelow, Minn.: Ranch near **46;** Town hall **47**
Bighorn sheep: Canada 760, **764,** 765, 773, 779; Rock-carving image **94-96,** 97
Bilbo, Theodore G. 863
Billion-dollar Gamble in Brazil. By Loren McIntyre. May, 686-711
Binti, G. T. 845
Biological pest-control 156, **156,** 157, 161, **162-165, 167;** Predation, insect 160, 161, **168, 171**
Bioluminescence: Bamboo coral 628, 631; Lantern fish 631
Bir Thlethine, Tunisia 192; School 192, **200**
Biratori, Japan: *kotan* (Ainu village) 73
Bird migration: Fall migration: Chincoteague Island, Va. 829; Snow geese, greater 594, 623, 829
Birdbanding: Chincoteague Island, Va. **824,** 826
Birds: Europe's endangered 375; Hawk, Swainson's **55;** Lark, horned 54, nestling **54;** Ospreys **777;** Prairie chicken, greater: Courtship display 38, **54,** 55; *see also* Owls; Water birds
Bison, American: Buffalo slaughter (rock-carving image) **116;** Reestablishing of 48, 51, 60-61; South Dakota 42, **60-61;** Texas 461
Black bears: Canada 766
Blair, James P., photographer: ***Greece: "To Be Indomitable, To Be Joyous."*** Mar., 360-393
Blakiston Line (natural demarcation zone), Japan 75
Blanch, James **564**
Blazing stars (wild flowers) **38-39,** 59
Blehm, Jack **164**
Blue jeans: Estonian dress **488-489,** 495, black market prices 495
Bluestem grass, big and little 42, 46, 48, 59
Boatbuilding: Canada 616
Boats: Canoes **708, 709;** Chincoteague scow 819, 820; Dinghies **491;** Dredge boats, sea-clam **819;** *see also* Ferries
Bodley, George 555
Boldt, George 614
Bolduc, Marcelle 596
Boll weevil **149,** 151; Control efforts 151, 156, 157; Cotton losses caused by 148, 151; Enemies, natural 160-161; Range, U. S. (map) 149
Bollworms, pink **149,** 151; Biological control 157, wasps **165;** Range, U. S. (map) 149
Bon, Cape, Tunisia 192, 197
Bonhomme Carnaval (snowman) **608,** 609
Books, NGS: Special Publications: *Exploring the Deep Frontier* 627
Boone, N. C. 354; Mayor 345
Boraiko, Allen A.: ***The Pesticide Dilemma.*** Feb., 145-183
Borji, M'henni 210
Borneo (island), Indonesia *see* Tanjung Puting Reserve
Bow-and-arrow craft: Apache 285, 287
Bow Pass, Banff National Park, Canada **757-759**
Bow Valley, Canada 762, 767; Aerial view **770-771**
Bowie, Jim 451
Bowl, gold: Celtic tomb **435,** 438
Box, Thad 298, 310-311, 319
Boyd, James 354
Brain, human: Pesticide effects 150; Plexiglass model 1
Brandenburg, Jim, photographer: ***Heart of the Canadian Rockies.*** June, 757-779; ***The Tallgrass Prairie: Can It Be Saved?*** Jan., 37-61
Brazil *see* Jari Florestal e Agropecuária Ltda.
Brazzel, Jim 157
Brewster, Pat 763
Bridal fair: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129
Bridgehampton, N. Y. 668; Beach houses **663**
Briggs Hardware, Raleigh, N. C. 349
Brimberg, Sisse, photographer: ***Washington Cathedral: "House of Prayer for All People."*** Apr., 552-573
Brimmer, Esther **573**
Brindamour, Binti Paul Galdikas **840, 841,** 845, 849, **853,** *cover*
Brindamour, Rod **849;** photographer: ***Living With the Great Orange Apes: Indonesia's Orangutans.*** June, 830-853
Brinkley, David 348
Brinkmann, Baxter **456**
British Columbia's Cold Emerald Sea. By David Doubilet. Apr., 526-551
Broadhurst, Michael 767
Bronzes: Celtic tomb **428-429,** 430, **431-437,** 437, 438
Brooches, gold: Celtic tomb 430, **434,** 438
Brouchoud, Father 654, 656, 657, 660
Brown, Herbert C. **157**
Brown, Mark 639
Brown bears, Ezo 76, 85
Buck, Warran **534**
Buckalew, John 824, **824,** 825, 826
Buddha figures: Tibet 231, **246**
Buddhism: ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259
Buddhist deities: Tibetan Buddhism **244-245, 247, 251, 255**
Buddhist temples and shrines *see* Jokhang (shrine); Swayambhu temple; *and* China: Religions
Buffalo, American *see* Bison, American
Buffalo, water *see* Water buffalo
Buffalo-beef cattle 161
BUGNET (computer) 157
Bulgarian–Greek relations 379; War 374
Bullfrog 141, **141**
Bultsma, Paul **40**
Bunting, Harry Clay 829
Buren, William F. 157, 160
Burial customs: Ancient Jews **732,** 743, 749; Celts 429, 438
Burial mound *see* Celtic tomb
Burial rites: Apache 275, **286,** 287
Burlington Industries: North Carolina 354
Burmese refugees: Thailand 634
Burnette, Ryan **284,** 290
Burroughs Wellcome Co.: Research Triangle Park, N. C. **345,** 348
Burtis, Orville 48
Butler, Hal 283
Butler County, Kans.: Ferrell ranch 42, 46
Butterfly crab **548**
Butterfly mimics and models 404, **404-407,** 406-407
Byzantine Empire 184, 379; Fall of 371

C

C and R Hatcheries: Long Island, N. Y. 676, 678
Cabins, two-story: Neshoba County Fair, Miss. 854, **855,** 856, **857-859,** 866, **866**
Cabrera, Hortensia 792
Cadillacs, junked: Amarillo, Texas 470, 474
Cafés, outdoor: Athens, Greece 381, 382; Rethimnon, Crete **392-393**
Caldron, bronze: Celtic tomb 430, **431,** 438, rim **434-435**
Calexico, Calif.: Border fence **791;** Clothing factory **798;** United Farm Workers **788-789**
California: ***The Mexican Americans: A People on the Move.*** By Griffin Smith, Jr. June, 780-809; ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
California State University, Northridge: Chicano courses 786
Callisto (Jovian satellite): ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Craters 21, 27, **27,** 28; Giant impact basin 21, **26,** 28
Discovery 11
Distance from Jupiter 20

Ice 20, 27, 28
Interior structure 20, 28; Diagram **20**
Name origin 20-21
Size 20, 21
Voyager flybys 12, 13, 21, 22
Cambodia *see* Kampuchea
Cambodian refugees: Aid for 637, 642; Thailand **636-637,** 639, 641; Vietnam 635, 642
Camouflage: ***Deception: Formula for Survival.*** By Robert F. Sisson. Mar., 394-415; Long-eared owls 31; Marine life 408-409, **408-409, 542,** 549
Campos, Gonzalo 808
Campos, Olivia, and family **809**
Can the Tallgrass Prairie Be Saved? By Dennis Farney. Jan., 37-61
Canada: ***Close-up, Canada: Quebec, Newfoundland.*** May supplement; National parks: First 762, 763 *see also* Banff National Park, *outlined,* map locating 762, number of 762, *see also* Banff National Park; Jasper National Park, *outlined;* Oil reserves 585; ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623; United States and 585
Canadian National Railway 760; Hotel 769
Canadian Pacific Railway 762, 763; Hotels 763, 767
Canals, underground: China 323
Cancer: Pesticides, carcinogenicity of 157, 160, 177, 178, 181
Cancer center: Houston, Texas 460, **476,** treatment 460, 476
Canoe race: Trois-Rivières, Canada: Portage competition **600-601**
Canoes: Jari River, Brazil **708, 709**
Canterbury, Frederick Donald Coggan, Archbishop of **553**
Canyonlands National Park, Utah 97; Land acquisition dispute 115; Maze 105, **106-107**
Cap-Tourmente, Canada: Snow geese, greater 594, 623
Carcinogens: Chemicals tested for 157, 160, 179, 181
Cardinal, Dave 763, 766
Caribbean pine: Pulpwood cultivation 695, **696-697,** 699, **700-701**
Caribou: Canada 760, 762, 777, 778
Carnivals: Greece 373; Quebec City, Canada 597, **608, 609;** St.-Irénée, Canada: Woodsmen's contest **618-619**
Carrizo, Ariz. (reservation community) 273, 275, **288-289**
Carson, Rachel 151
Carter, Jimmy (James Earl, Jr.) 393, **570**
Carthage (ancient city) 184, 188, 193, 198, 199, 201; Christianity 201; Excavation of 199, 201, finds 201
Carthage, Tunisia 201
Cartier, Jacques 604, 610, 612
Carver's Creek Methodist Church, N. C. 334
Caterpillars: Camouflage: Cryptic coloration **402, 403, 414, 415,** deflective coloration (eyespots) **402,** 402-403, specialized resemblances **403, 414, 415;** Gypsy moth **149;** Water-lily leaf-cutter **142,** life cycle 142; *see also* Loopers
Cathedral, Renaissance: Turin, Italy **733,** 743
Cathedral Church of Saint Peter and Saint Paul, Washington, D. C. *see* Washington Cathedral
Catholicism, Chinese 331; Cathedral: Beijing, China 331, communion **330,** confession **331**
Cattle; cattle raising: Amazon Basin 695, 704, 705; Flint Hills, Kans. 42, 46, 50, 52; Fort Apache Reservation 273, 280, roundup **272-274;** Hereford calf **272;** Oursi, Upper Volta 518, 521, 522, 525, drought season 514, 515, 524; Texas 445 map note, 470, 481, 483, feedlot industry **442-443,** 445 map note, 470
Cattle Baron's Ball: Dallas, Texas **456-457**
Cayler Prairie, Iowa **38-39**
Celtic tomb: ***Treasure From a Celtic Tomb.*** By Jörg Biel. Mar., 428-438
Cemetery, pioneer: Illinois 37
Central Greece (region), Greece: Holy Week **372-373,** 386
Chambéry, France: Shroud of Turin enshrined (1453-1578) 734
Champlain, Samuel de 597, 603, 612, 623
Chapa, Abel 786
Chapel Hill, N. C. 345, 348, 349
Charlotte, N. C. 352; Independence Square **332-333;** Population 336; Revival meeting **351;** Schools: Desegregation ruling 352, special-program director **338-339,** students **338-339**
Charny, Geoffrey de 734
Chase, William Merritt 668
Chateau Lake Louise (hotel), Banff National Park, Canada 767
Chavez, Cesar 788, 796
Cheerleaders: Dallas Cowboys **447;** University of North Carolina **353**
Cheetahs: ***Cheetahs: In a Race for Survival.*** By George W. and Lory Herbison Frame. May, 712-728
Courtship and mating 722-723, 728; Estrous broadcast 727, 728
Cubs **714-717,** 716, 718, 721, 725, 727; Coloration **719,** 721, 725; Play **719,** 727
Habitat, loss of 712, 713, 715, 728
Hunting **714-715,** 715; Killing method 720, 721, 725; Patterns 718
Infant mortality 717
Life span 717
Predation of 717, 725
Range 712, 716
Speed 713, 716; Average 715, 717; Top 715, 717
Territory: Defense of 712, 717, 718, **724-725;** Marking of 721
Threatened species 712, 715, 728
Chemical-plant workers: Pesticide-exposure limits 166
Chemical pollution: ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
Chemical warfare: Laos 647
Chemotherapy: Cancer treatment 460, 476
Chenini, Tunisia 210, 213
Cherokee Indians: North Carolina 336, 343, 345; Sam Houston and 451
Chevalier, Ulysse 743
Chicago, Ill., suburbs **45,** prairie preserves 37, 42, **44, 45**
Chicano Park, San Diego, Calif. **782-783**
Childs, Gilbert **288**
Chili, Texas 446, 461, 470; Cookoff **463**
China, People's Republic of: American trade with 457
Hmong 646, 652
Journey to China's Far West. By Rick Gore. Mar., 292-331
Birth control policies 321, 327
Capital *see* Beijing
Character of the people 301, 307, **307,** 318, 327, 331
Communism 300, 324, 326
Desert research **306, 308-309,** 310, 317
Established 298; 30th anniversary 292, 318, festivities **295-297,** 318
Ethnic groups 299, 304, 310, 321, 322, 323; Affirmative action 321-322; Birth control policies 321, 327; *see also* Han Chinese; Kazaks; Uygur people, *below*
Farms and farming 304, **304,** 305, **312-313,** 313; Communes 330, 331; Crops 301, 318, 323, 325, 327; Mechanization 327; State farms 326-327
Food **324-325,** 325-326, 330
Han Chinese 299, 317, 321, 322, 326; Language 319, 321
History 298, 300, 313, 317, 318, 321, 323, 324; Cultural Revolution 300, 307, 317, 321, 326, 331
Industry 299, 311, 317, 318, 321-322
Irrigation 305, 313, 323, 325
Kazaks 321, **323-326,** 327, **328-329,** 330
Population 305; Growth 305
Railroads 302, 304, 310, 313 *see also* Trains, *below*
Red Guard 300, 321, 331

Religions 324; Buddhism 324, shrines 313, 321, 324; Christianity: Catholicism **330,** 331, **331;** Islam 292, 310, 317, 321, 324, 326
Trains 301, 302, **302-303,** 305; Entertainment 302, **303,** 305; Meals 305, 310
Transportation **310-311, 322** *see also* Trains, *above*
Uygur people **292-294, 316, 318-319,** 321-322, 325-326
Vietnamese history and 635; 1979 invasion of Vietnam 634
see also Tibet
Chinch bug **159**
Chincoteague Island, Va.: ***Chincoteague: Watermen's Island Home.*** By Nathaniel T. Kenney. June, 810-829
Accessibility 821, 822
Arts and crafts: Boatbuilding 820; Carving, decoy 819, 826, **826, 827**
Conservation; conservationists 819, 824-825, **824**
Fishing, gillnet 817, 820
History 810, 812, 820, 821-822, 829; Early economy 812, 821-822, livestock and farming 812, 820; First landowner 812; Shipwreck salvaging (18th-century) 812, traders' "trade names" 812
Horse roundup and auction *see* Pony Penning Week, *below*
Literary associations 810, 815, 829
Name, origin of 812
The people 810, 811, 816, 821; Ancestry 821; Nicknames, prevalence of 816-817; Occupations 818, 819, 820, 826, 828; Speech and colloquialisms 810, 812, 816, 818, 820, 829
Poaching (1940s) 819, 824, 826
Pony Penning Week **814-815,** 828, 829
Population 810
Restaurants and inns 812, 816
Seafood 816; Clamming **811,** 816, 818; Industry 811, 812, 816, 821, oysters, oyster farming 810, **812,** 817-818, 820
Seasons 810, 817, 818, 828, 829
Size 810, 812
Tourism 812, 822; Accommodations 812, 816, 823; 1800s 821; Tourists 810, 814, **814-815,** 816, 823, 828
Township 816, **816-819;** Residential area 816, **817**
Chincoteague National Wildlife Refuge, Va. 812, 822-823, **824-825,** 828, 829; Visitors, number of 825
Chincoteague scow 819, 820
Chincoteague Volunteer Fire Department: Assateague horses, owners of 814, 829; Foal auction **814, 815,** 828, 829
Chips, electronic 474, **477;** Human speech synthesized 470
Chocolate Monopoly set **452**
Choctaw Indians: Sacred mound 856
Chou Enlai *see* Zhou Enlai
Christians and Christianity: Relics *see* Shroud of Turin; Rituals *see* Communion; 13th-century tyranny of 491, 494
Church of God (Tomlinson branch): Ten Commandments Mountain, N. C. **350**
Church services: Folk service: Washington Cathedral **570-571;** Mexican-American services: San Antonio, Texas 450
Church ritual *see* Communion
Churches *see* Beecher Bible and Rifle Church, Wabaunsee, Kans.; Nan Tang Cathedral, Beijing, China; San Giovanni Battista, Turin, Italy; Washington Cathedral, *and by denomination*
Cibecue, Ariz. (reservation community) 285; Roundup **272-274**
Cisneros, Henry 791, 792, 796, 808
Civil war, Greek 368, 373, 374
Civil War, U. S.: Chincoteague Island, Va. 821; North Carolina 336, casualties 336
Claiborne, Craig **676**
Clamming: Chincoteague Island, Va. **811,** 816, 818
Clams: Cherrystone clams 818, 821; Razor clams 816, 817, 818
Clari, Robert de 734
Clark, Walter 824, **824**
Clark, William S. 90
Classroom, mobile: Imperial Valley, Calif. **797**
Clayton, Ronnie **857**
Cleland House rehabilitation center, East Los Angeles, Calif. **800**
Clement VII, Pope (Avignon) 734
Cloutier, Pier 616; Wood carving **617**
Coal: China 302
Coal miners: Hokkaido (island), Japan **80;** Bathing **80-81**
Coast Range, Oreg: Herbicide contamination 178, 182
Cody, Lynn 283
Coggan, Frederick Donald **553**
Coin necklace **513**
Coliseum, Roman: El Jem, Tunisia **186-187,** 197-198
Collective farms: Estonia 499, 500, 509-510, 511; innovations; investments 496, 500, resistance to collectivization (1949) 500; *see also* Communes
College of Preachers, Washington Cathedral 562
Colonization: Mexican Texas, settlement of 450; *see also* England; France; Spain
Columbia Glacier, Alberta, Canada **754-756,** 769
Columbia Icefield, Alberta, Canada **754-755,** 760, 769; Size 769
Combines: Greece **378;** Texas 460, **465;** Tibet **231,** transport and reassembly of 249-250
Coming of Age the Apache Way. By Nita Quintero. Feb., 262-271
Communes: China **324-325,** 330, Tibet 245, 248, **256-257,** worker **326,** 330-331
Communion (ritual): Nan Tang Cathedral, Beijing, China **330;** San Giovanni Battista, Cathedral of, Turin, Italy **732-733**
Communism: China 300, 324, 326; Estonia 439, ***Return to Estonia.*** By Priit J. Vesilind. Apr., 485-511
Communists: Greece 382, 392, Civil war (1940s) 368, 373, 374
Communities Organized for Public Service (COPS): San Antonio, Texas 794, 802
Compass plant 37
Computer application: Density scans: Shroud of Turin 731, 748, cardboard model **730-731;** Pest management 157
Confessional: Nan Tang Cathedral, Beijing, China **331**
Connor, Thomas 690
Conservation: Chincoteague Island, Va. 819, **824,** 824-825; Hokkaido wildlife, reestablishing of 76, 78, 85, **90;** Seed gleaning 37, 45, 59; ***Seeking the Best of Two Worlds*** (Apache). By Bill Hess. Feb., 272-290; ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Constantine, King (Greece) 373
Continental Divide: Columbia Icefield, Canada 760, 769
Contreras, Rufino 796; Memorial service **788-789**
Convention centers: Fort Apache Reservation 280; *see also* Dallas, Texas
Cooke, Alistair 665, 678-679
Cooley, Denton 457
Cooperatives: Apache cattlemen 273, 280; Estonia 488-489, 496
COPS (Communities Organized for Public Service): San Antonio, Texas 794, 802
Corals: Bamboo coral **630, 631,** bioluminescence 628, 631; Soft corals **534-535**
Corchaug Indians: Long Island, N. Y. 678
Cordgrass 48, **56-57, 822-823**
Corn pests **158-160,** 161
Cosgrove, James 536
Cosgrove, Polley 59, 61
Costle, Douglas M. 150
Côté, Robert 616
Cottage industries: Greece 374
Cotton farming: Texas 156-157, 444, 474
Cotton pests *see* Boll weevil; Bollworms
Cottonwood Canyon, Utah 97; Rock carving **94-96**
Cottonwood Falls (town), Kans. 40
Coulson, Cotton, photographer: ***Return to Estonia.*** Apr., 485-511

Cowboys **480-481,** 481, 483; Apache **272-274,** 280; Rodeo 446-447
Crab apples **230**
Crabs: Butterfly crab **548;** Hermit crabs **548-549;** Rock crabs, red **548,** mating 549
Cradleboards **280-281**
Crafts *see* Arts and crafts
Cranes, tancho 76
Creatures That Deceive to Survive. By Robert F. Sisson. Mar., 394-415
Cree Indians 769
Creighton, William F. **564**
Crete (island), Greece 387, **392-393**
Crockett, Davy: Alamo forces 451; Execution of 451
Cross-country skiing: Summer training **774**
Crown dancers, Apache **262,** 263, 275, 278, 287, 290
Crucifixions: Anatomy of 737-740, 746, 747; Roman Empire 737, 747
Crusaders: Estonia, invasion of 491, 494; Greece, invasion of 368
Crystal City, Texas: Mexican-American separatists 794
Cucumber plants: Pathogen treatment **167**
Cultural Revolution: China 300, 307, 317, 321, 326, 331
Cyprus (island), Mediterranean Sea: Turkish invasion (1974) 382, 386, 393
Czechoslovakia: German occupation of (1939) 485

D

DBCP (pesticide): Banned 177; Carcinogenicity of 177, 178
DDT (pesticide): Banned 151; Disease, insect-borne, and 151; Introduction 151; Resistance to developed 151, insects exhibiting **154, 155**
Dababi, Ahmed 192
Dahlgren, James 166
Daisetsuzan National Park, Hokkaido (island), Japan 78-79; Thermal stream **92-93**
Daisey, Cigar 819, **827;** Decoy art 819, **826, 827**
Dalai Lama: ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259
Choosing of 227-228, 244
Escape from Tibet: 1950 221; 1959 225, 228, 238
Name origin 227
Palaces of **218-219,** 219, **222,** 223, 228, **235-237,** 238, 240; Grounds **241;** Interior **224-225, 239**
Reincarnation theory 227, 244
Dale, Bruce, photographer: ***Journey to China's Far West.*** Mar., 292-331; ***The St. Lawrence River: Canada's Highway to the Sea.*** May, 586-623
Dale, John **346**
Dallas, Texas: ***Texas!*** By Howard La Fay. Apr., 440-483
Churches 468
Commerce and industry 453, 458, 468, 477
Construction boom 458, 468
Convention center 453
Cultural and recreational facilities **458, 459,** 468
Downtown **458, 459;** Problems 468
Financial center 453
Insurance center 453, 468
Population 444
Shopping center, award-winning 453, 468
Social functions **456-457**
Dallas Cowboys: Cheerleader **447**
Dallas-Fort Worth Metroplex, Texas: Size 445 map note, 464
Dallas/Fort Worth Regional Airport, Texas 464
Damba (Tibetan) 245
Dams: Tibet **228-229,** 250-251, 254
Dances; dancing: Apache crown dancers **262,** 263, 275, 278, 285, 287, 290, puberty rites **265, 267,** 269; Bali, Indonesia 422, **422-423, 427;** Charlotte Experimental Theatre dancers **332-333;** China 317-318; Estonian folk dancing **499;** Greece **360-361,** *kefi* 391
Danes: Estonia, conquest of 485, 491, 494, 504
Daniels, Jonathan 348
Darenberg, Carl, Jr. 666
Dating, archaeological: Rock art, Utah 97, 105, 112, 115, diagram **105**
Dating methods: New techniques 752; Radiocarbon dating 752
David G. Burnet Elementary School, Houston, Texas: Bilingual instruction 806, 808
Davies, Jim 766
Davis, Archie K. 348-349
Davis, Raymond **342**
Dazen, Gregg **288**
DeBakey, Michael E. 457
Deception: Formula for Survival. By Robert F. Sisson. Mar., 394-415
Declay, Alice 287
Decoys, duck **826, 827;** Value of 819, 826
Deer, Ezo: Hokkaido (island), Japan **84**
Dehose, Phillip **274**
Delage, Yves 743, 747
Deng Xiaoping 300
Density scans: Shroud of Turin research 731, 748, cardboard model **730-731**
Derrington, C. Earl, Jr. **859**
Desertification: China 298, 304, 305, 317, research and reclamation **306,** 309, 317, 326, sand-dune stabilizing **308-309,** 310
Deserts: ***Journey to China's Far West.*** By Rick Gore. Mar., 292-331; Tunisia **214-215;** *see also* Sahel
Desgagné, Jaz 616, 618
Deuschl, Dennis 604
Devillers, Carole E.: ***Oursi, Magnet in the Desert.*** Apr., 512-525
Dhidhimotikhon, Greece 379
"dioxin" *see* TCDD
Divers and diving: ***A Walk in the Deep.*** By Sylvia A. Earle. May, 624-631
Diving suit *see* Jim
Djelidi, Ahmed 184
Dolah (Borneo workman) 840-841
Dolan, Jacqueline 763
Dolls, carved: Apache crown dancers **285,** 287
Don Diego VFW Post, San Diego, Calif. 806
Donacia beetle 139, **139;** Eggs **139;** Larva **139;** Life cycle 139
Donaldson, Tony 59, 60
Donkeys **119, 208**
Doubilet, David, photographer: ***British Columbia's Cold Emerald Sea.*** Apr., 526-551
Dough art, Balinese **425;** Cookie *sarad* **424**
Douz, Tunisia 217
Dow Chemical U.S.A.: Herbicide manufacture 178, **181,** research 181, 182
Dracunculosis 512, 514
Draft horse racing: Hokkaido (island), Japan 67, **72**
Draft horses 67, **72, 310-311, 501**
Dragonflies 131, **135, 141;** Life cycle 134, **134**
Drepung (monastery), Tibet 228, 231, 238; Rock paintings **255**
Dress, ceremonial: Clergy **330, 553, 563-565, 732-733, 794;** *see also* Bridal fair; Eka Dasa Rudra (Balinese festival); Sunrise Dance
Duck poaching (1940s): Chincoteague Island, Va. 819, 824; Overkill 818-819, 826
Duck trap **827**
Ducks, Pekin: Long Island, N. Y. 676, **677,** 678
Ducks, wild: Chincoteague–Assateague area, Md.–Va. 818-819, **824-825,** trapping **827;** Reduction of flocks 818-819
Duffy, Frank H. 150
Duke, James Buchanan 354
Duke University, N. C. 337, 345, 348, 349, 354; Medical Center **344**
The Dukes (gang): East Los Angeles, Calif. 803
Dumpleton, Don 773
Dunhuang, China 313; Flood (1979) 313
Dunn, Charlie 476
Dunn, Fred 46
Durham, N. C. 348, 352, 354
Duryea, Perry 683

E

Earle, Sylvia A. **624, 631;** ***A Walk in***

the Deep. May, 624-631
Early, Jack D. 150
Earthwatch: Study grant 576, 577
East African Wildlife Society: Cheetah study support 716
East Hampton, N. Y. 668, 681; Newspaper office **682**
East Hampton Star: Editor **682,** 684
East Los Angeles, Calif. **787;** Gangs 802, 803, rehabilitation center **800;** Public service organizations 802-803; *vatos locos* **800-801**
The East Los Angeles Community Union (TELACU) 802
Easter Eucharist: Washington Cathedral 563, **570-571**
Eastern Orthodox Church: Monasteries 370, **382, 383**
Eastport, N. Y.: Ducks **677**
Echeveste, John 802
Ecosystems *see* Lily pad; Prairie
Edenton, N. C.: Courthouse 341
Edwards, Mike: ***Tunisia: Sea, Sand, Success.*** Feb., 184-217
Eels: Eel catch: St. Lawrence River, Canada–U. S. **621;** Wolf eels 536, **537**
Egrets: Cattle egret **828;** Great egrets **824-825**
Einstein, Albert 664
Eiseman, Fred and Margaret, photographers: ***Bali Celebrates a Festival of Faith.*** Mar., 416-427
Eisenhower, Dwight D.: Funeral 565
Eisenmann, Hazel 659
Eka Dasa Rudra (festival): ***Bali Celebrates a Festival of Faith.*** By Fred and Margaret Eiseman. Mar., 416-427
  Dancers and dancing 422, **422-423, 427**
  Duration 419, 426
  Eka Dasa defined 419
  Offerings **416-417, 421, 424, 425**
  Pilgrims **420-421**
  Priests **418,** 421, **426**
  Processions **416-417,** 419
  Sacrifices 419, 421, 426
  Taur rites 419, 426; Dancers **427;** Offerings **421**
Electronics industry: Texas 445 map note, 474, 476, 477
Elgin, Kans.: Cattle town (1890s) 46, decline of 46
Eliade, Mircea 109
Elizabeth II, Queen (Great Britain and Northern Ireland) **564,** 566
Elk 38, 51, **58;** Loss of habitat 51, 59
Ellis, William S.: ***The St. Lawrence River: Canada's Highway to the Sea.*** May, 586-623
Ellsworth, Lincoln 763
El Paso, Texas 444, 478, **478-479;** Mexican border 478, 798, fence, 477, **478;** Mexican immigrants, illegal 477, 478, 800-801
Elytis, Odysseus 393
Empress of Ireland (liner): Wreck 606
Endangered and threatened species: European birds, refuge for 375; *see also* Cheetahs; Orangutans; Rare wild flowers
Energy sources *see* Power plant, wood-burning
England: Colonization: Roanoke Island, N. C. 338
Ennabli, Abdelmajid 201
Enrie, Giuseppe 747
Ensman, Tom **288**
Enstine, Ray 664
Entrance, Canada: General store **768**
Environmental concerns: Amazon Basin: Jari enterprise and 694, 696, 699, 704, 705, 710, 711; ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183; *see also* Desertification; Endangered and threatened species
Environmental Protection Agency: Pesticide regulations; controls 150, 151, 160, 177, 178
Epirus (region), Greece 373-374
Episcopal Church in the United States: ***Washington Cathedral: "House of Prayer for All People."*** By Robert Paul Jordan. Apr., 552-573
Erilt, Erich 509-510, 511
Ernesaks, Gustav **492,** 502
Erosion: Montauk Point area, N. Y. 666; Outer Banks, N. C. 341
Ervin, Sam 343, **348**
Estonian S.S.R., U.S.S.R. 439; ***Return to Estonia.*** By Priit J. Vesilind. Apr., 485-511
  Agriculture 496, 500; Collective farming 499, 500, 509-510, 511, profits investment 496; Private-plot farming 493, 496, 500, **500-501;** State farms 499, 500
  Capital *see* Tallinn
  Collectivization: Farming *see* Agriculture, *above;* Fishery 501; Resistance to (1949) 500
  Colleges and universities 507
  Consumer goods: Luxury items 502; *see also* Shortages, *below*
  Cooperatives 488-489, 496
  Economy 496
  Ethnic history: Arrival in Baltic region 494; Language 485, 494, 496, 501; Tribal origins 494
  Geohistory 485
  German invasion and occupation (700 years): Crusaders 491, 494; Feudal barons 491, 493, 494, 499; Hanseatic League 491; Third Reich 489
  Housing 493, **493, 494-495;** Allocated 498; Apartment complexes **486-487,** 494; Costs 486; Individual-house construction reinstated 510; Shortage of 486, 494
  Immigrants 502; Russians **495,** 496, 507
  Industry 496; Oil-shale mining 496, 507; Soviet status 491, 496
  Invasions, conquests, occupations of 485, 491, 494-495, 502; Christianity and 491, 494; *see also* German invasion, *above;* Soviet annexation, *below*
  Labor shortage 493; Immigrant workers 494, 496, 507
  Literature: Estonian writers 495, 500, 501, 504, censorship 501; Translations 496, 501, 506
  Map 490
  Music 496, 510; Music festival 492, 501-502; State male choir **510-511**
  National character 494, 496, 500
  National park 503
  Nationalism, preservation of 485, 495, 496, 500-501, 504; National anthem, unofficial 502
  Population 491, 496; Non-Estonian population 494, 496, 502, 507
  Republic, independent (1918-1940) 485, 491
  Restoration: Manor houses 510-511; Rural areas 499, 510
  Shortages 486, 494, 498, 499, 500; Automobiles 486, cost 486, waiting-list wait 498; Newspaper queue **486-487**
  Soviet annexation of (1940) 485, 489; 1944 diaspora 490; Nonrecognition of 490; Persons lost (1939-1949) 496, number of 490; Purges and deportations following 489, 490, 500
  Spas **508-509,** 509
  Standard of living 496
  Theater 496, 506
  Tourists 494, 509; Restrictions on 503; Russian tourists and shoppers 494, **499, 502-503**
  Wages 498; Cash-rich economy 486, 498; Labor 496, 498-499; Professionals' substandard 496 498, 499
  Western culture: Affinity with 488, 495, 496; Pop culture 488, 495, 496, 502; Suppression of 495-496
  Youth, concern for 498
Estrada Courts housing project, East Los Angeles, Calif.: Murals 802
Eucalyptus deglupta 695, 699; Growth rate 699
Europa (Jovian satellite): ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
  Craters 23, 27
  Diameter 20
  Discovery 11
  Distance from Jupiter 20, 25
  Ice 20, 22-23, 25, 27
  Interior structure 20, 22-23, 27; Diagram **20**
  Name origin 21
  Streaks 21, 22-23, **22-23,** 25, 27

Tidal forces 11, 17, 22, 23
Voyager flybys 13, 21, 22-23
Europe: Endangered and threatened birds: Refuge for 375; *see also* Estonian S.S.R., U.S.S.R.; Greece; Turin, Italy; *and* Celtic tomb
European Common Market 291
European Economic Community 291; Greece 360, 379, 386, 391-392
European red mite **149,** 151; Damage caused by 148; Range, U. S. (map) 149
Evans, Mark **742**
Everingham, John: ***One Family's Odyssey to America.*** May, 642-661
Evolution: Pesticide-resistant insects 148, 151, 158, mechanism **154,** 154-155; *see also* Adaptation, animal

F

Fair of the Berber Brides. By Carla Hunt. Jan., 119-129
Fairs, county *see* Neshoba County Fair
Famine: Kampuchea 634, 637, 642, victims of **636-637,** 639
El Faouar, Tunisia 217
Farm machinery: Greece 375, **378;** Rice farming **66,** 460, **465;** Tibet **231,** 249-250
Farm workers: Labor unions *see* United Farm Workers; Mexican Americans **144,** 145, 148, 781, **788-789, 792-793,** 796-797; Pesticide exposure 145, 148, 166, **174-175,** 177
Farmland: Loss of 45; Prairie converted to (1800s) 37, 40, 43, 46
Farmlands Preservation Program: Suffolk County, N. Y. 676
Farms and farming *see* China, Estonia, Greece, Hokkaido, Long Island, N. Y., North Carolina, Texas, Tibet, *for* Agriculture, Farms and farming; *and* Cattle; Organic farming; Sheep
Farney, Dennis: ***The Tallgrass Prairie: Can It Be Saved?*** Jan., 37-61
Faucher, Lionel **609**
Faulting: Mountain formation 769; River formation 619
Feedlots: Amarillo, Texas 445 map note, **442-443,** 470
Felix, Charles 802
Feller, Richard T. 561-562, **564**
Ferguson, Brian 167, 168, **173**
Fermi National Accelerator Laboratory: Prairie-restoration project **45,** 59-61
Fernandez, Ben 786
Ferrell, Jack 42, 46
Ferriamicide 160
Ferries: Greek ferry system 373, 379, **385,** 386, 387, map 370-371; Hokkaido, Japan 88, 91, map 65
Fertilizer, organic 161
Festivals: Greece **360-361;** *see also* Bridal fair; Eka Dasa Rudra; Music festival
Fiber optics: Shroud of Turin research 750
Figures, bronze: Celtic tomb 430, **432-433,** 438
Figures, stone: Utah rock art **104,** 105, 112, **113**
Finlator, William 349
Finnic languages: Estonian 494, 501
Finns: Estonian labor force, recruits of 494; Origins 494
Fire ants 157, 160, 170, **170-171;** Control, attempts to 160, 161, **170-171;** Predators, beneficial 160-161, **171**
Fires, prairie **48-49;** Benefits of 48
Fisher, Carl 666
Fishermen: Chincoteague Island, Va. 816, 817, 820; Japanese fishermen, Soviet arrest of 75, 87-88, 90; St. Lawrence River **621;** Tunisia **207**
Fishers Island, N. Y. 680
Fishes: Blackeye goby **551;** Eels **621,** migration 620, wolf eels 536, **537;** Irish lord, red **542;** Lantern fish 631; Lingcod **542-543;** Mackerel, Atka **70-71;** Pen-point gunnel **527-528;** Ratfish **542;** Rockfish **70-71;** Salmon **70,** fry release: Toyohira River, Japan 78, **90;** Sunfish **132,** tadpole predation 133
Fishing, commercial: Eel fishing: St. Lawrence River, Canada-U. S. **621;** Hokkaido (island), Japan **70-71,** 71, 86-87; Long Island, N. Y. 662, 666, 679, 683-684; *see also* Oysters; oyster farming
Fishing, net *see* Gillnet fishing; Haul seining
Fishing, spear: Oursi, Upper Volta 518, **518-519**
Fishing, sport *see* Sportfishing
Fitzpatrick, Dewey 461, 464
Flamingos **202-203**
Fleishman, Joel 349
Flies: Mimic wasps 412, **412, 413,** audio mimicry 412
Flint Hills (region), Kans.: Geology 40; Industrial intrusion 52; National park, proposed *see* Tallgrass National Park, *outlined;* Ranches 40, 41, 42, 46, 50; Settlement of 46, 50
Flores, Patricio, Archbishop **794**
Flowers: Frangipani **422-423;** Water lily **131;** *see also* Wild flowers
Folk art and crafts: Basket weaving 287; Beadwork **263-269,** 269; Bow-and-arrow craft 285, 287; Cradleboard construction **280-281;** Doll carving **285,** 287
Folk medicine: Apache medicine men 278, 287, 289; Healer **795;** Snakebite cure 37; Tibet **252,** 253, **253**
Folk services: Washington Cathedral **570-571**
Fonio 525
Fonville, Amon 168
Food: Pesticide contamination 175, 177, produce inspection 175, **176,** 177
Food chain: Pesticide accumulation 151
Ford, Bob 299
Ford, Charlotte 665, 669-670
Ford, E. B. 400
Ford, Elizabeth Bloomer **564,** 566
Ford, Gerald R. **564,** 566
Ford, Henry: Amazon Basin rubber plantations 699
"forest brothers" (Estonian resistance group) 489
Forest-products industry: Canada 591, 618-619
Forestry: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Fort Apache, Ariz.: History 278-279
Fort Apache Reservation, Ariz.: ***The White Mountain Apache.*** Feb., 260-290
I. ***At Peace With the Past, In Step With the Future.*** By Ronnie Lupe. 260-261
II. ***Coming of Age the Apache Way.*** By Nita Quintero. 262-271
III. ***Seeking the Best of Two Worlds.*** By Bill Hess. 272-290
Area 278
Arizona, conflicts with 279; Litigations 280
Cattle raising 273, 280; Roundup **272-274**
Conservation practices *see* Energy conservation; Forestry; Rangers; Water resources; Wildlife protection, *below*
Cultural center 284-285
Economy 277, 278, 279, 280, 283
Employment; unemployment 278, 283, 284
Energy conservation: Solar collectors **279;** Waste-burning power plant 290
Enterprises, tribal 261, 275, 277, 278, **278-279,** 279-280, 283, 290
Fish and game 277, 279-280
Forestry 283
Government, tribal: Administrative units 279, 284, 287; Council 279; Financial support 283; Officials 283, 284, 290 *see also* Lupe, Ronnie
Grazing land 273, 280
Housing 273, 275, 278, 283, **290**
Hunting, sport: Fees 279-280
Leasing and rental income (non-Indian community) 279
Lumbering 277, 278, 283, 290
Maps 261, 276
Medicine and health 278, 287; Hospital 278, **278-279,** 287;

Medical care 287; Nursing home 287
Mineral resources 290
Natural resources *see* Resource development, *below*
Newspaper 275; Editor *see* Hess, Bill
Non-Indian community, closing of 279
Population 275
Rangers 279
Resort facilities *see* Tourist attractions, *below*
Resource development 273, 275, 277, 278, 279, 280, 283, 290; Native plants, use of 280, 285. 287
Shopping center 278, 283, 284
Ski resort 277, 278, 280; Ski patrol 280, **283**
Solar energy, use of **279**
Sovereignty of 279-280
Tourist attractions 277, 278, 279, 280, **282, 283;** Arts and crafts **280-281,** 285, **285,** 287; Convention center 280
Water resources 279, **282;** Dam 279; Watershed 277, 279, maintenance 283
Wildlife protection and management 279-280, 283
Fort Apache scouts (1870s) 278
Fort Apache Timber Company (FATCO) 283, 290
Fort Niobrara National Wildlife Refuge, Nebr.: Elk **58**
Fort Worth, Texas 464; Aircraft assembly plants 464; Cultural and recreational facilities 454, **454-455,** 464; Population 464
Fortresses: Greece 368, 373, towers 368, 372; Jiayuguan, China 313, **314,** 317
Foscue, Henry A. 352
Foster, Ambrose **266,** 269
Foster, Gertrude 263, 264, **264,** 269
Foxes: Ezo red foxes 75, 85, hunting of 76
Frame, George W. and Lory Herbison **717;** ***Cheetahs: In a Race for Survival.*** May, 712-728
France: Colonization: Southeast Asian colonies 635; Texas 444, 450; Upper Volta, conquests in (1916) 514
Franklin City (ghost town), Va. 821; Economic decline 821; Railroad (1800s) 821
Fredericksburg, Texas: Luckenbach fair **463**
Frei, Max 747, **750**
Freireich, Emil J 460
Fremont culture: Rock-art style 97, 112, examples and possible examples **94-96, 112-114,** 115
French Canadians 596; Birthrate 597, 600; Religion 597; Separatist movement 597, 598, 600; Terrorism 600
Fresno, Calif.: "lowriders" **806-807**
Friar's Head Farm, Long Island, N. Y. 675
Friday, Bill 345
Frogs: ***Life Around a Lily Pad.*** By Bianca Lavies. Jan., 131-142
Frohman, Philip Hubert 555, 561, **564,** 565
Fruit growing: ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
Fruit trees: European red mite 148, **149,** 151
Fu Gueimin **303**
Fulani: Oursi, Upper Volta 512, 514, 515, 516, 522, 524, 525
Funerals: Apache 275, **286,** 287; Presidents of U. S.: Washington Cathedral 562-563, 565
Fur patchwork: Greek cottage industry 374
Furniture manufacturing: North Carolina 336, 352; Craftsman **359**

G

Gabes, Tunisia: Chemical plants 197
Gahan, Gordon W., photographer: ***Texas!*** Apr., 440-483
Galdikas, Biruté M. F.: ***Living With the Great Orange Apes: Indonesia's Orangutans.*** June, 830-853
Galileo: Astronomical discoveries: Jupiter's moons 5, 11, 29
Galileo (spacecraft) 18, 28
Galveston, Texas: Hurricane (1900) 460; Oil production 460
Game wardens: Chincoteague Island, Va. 818, 819, 824; Retired **824**
Games: Tibetan *sbag* **241**
Gammage, Manny **462,** 477
Gammoudi, Mohamed 206
Gandy, Evelyn **862**
Gang of Four: China 300
Gangs: East Los Angeles, Calif. 802-803
Ganymede (Jovian satellite): ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Craters 21, **24, 25;** Giant impact basin 22, **25**
Diameter 20
Discovery 11
Distance from Jupiter 20
Gravitational forces 11, 17, 27-28
Grooves **25,** 27
Ice 20, 25, 27
Interior structure 20, 27; Diagram **20**
Name origin 21
Tectonic activity 27, 28
Voyager flybys 13, 21, 22
Gaochang, China: Buddhist temple ruins 324
Gardenhire, Curtis **52**
Gardiner, Lion 681
Gardiner, Robert David Lion **680,** 681
Gardiners Island, N. Y. 664, 680-682, **680-681;** Wildlife 680, 682
Garrett, W. E.: ***Thailand: Refuge From Terror.*** May, 633-642
Gasoline pumps: Gravity pump **768**
Gaspé Peninsula, Canada 595, 616, **622-623,** 623
Gastelum, Adam 806
Gaston, Neil 42
Gauthier, Abel **615**
Gazelles, Thomson's: Cheetah predation **720,** 721
Gendron, Viateur 620
Gendun Gyatso 238
Gensburg–Markham Prairie, Chicago 42
George W. Wells (schooner) 341
Georges Bank, North Atlantic: Scallopers 679
Georghiou, George P. 155, 158
Georgia, Strait of, Canada–U. S.: ***British Columbia's Cold Emerald Sea.*** By David Doubilet. Apr., 526-551
German settlers: Texas 444, 468
German-Soviet alliance (1939-1940): Eastern Europe and 485, 489
Germany, Federal Republic of: Archaeology *see* Celtic tomb
Germany, Third Reich: Eastern Europe, invasion of (1939) 485, 489; Estonia, occupations of *see* Estonia; Greece, occupation of 368, 373, 391; Soviet Union, invasion of (1941) 489
Ghost town: Franklin City, Va. 821
Giddings, Al, photographer: ***A Walk in the Deep.*** May, 624-631
Gillnet fishing 817, 820
Glacial deposits: South Dakota 42
Glaciers: Canada **754-756,** 760, 767, 769; Formation 769
Glass art *see* Stained glass
Glover, Charles Carroll 552, 555, 562
Goats 518, **520-521**
Goats, wild *see* Mountain goats
Gobi (desert), China 298, 305; Lesser deserts 305; Map locating 299; Defined 298, 305
Goby, blackeye **551**
Gold objects: Celtic tomb 430, **434, 435,** 438
Golf courses: Pinehurst, N. C., area 337 map note
Gondola lift: Construction of **773**
Gonella, Luigi **741-742**
Gonzalez, Henry B. **785**
Good Friday procession: Tucson, Ariz. 786
Goodland, Robert J. A. 704
Gordon, Buster **267, 269,** 290
Gordon, Renzie **267, 269,** 289-290
Gore, Rick: ***Journey to China's Far West.*** Mar., 292-331; ***What Voyager Saw: Jupiter's Dazzling Realm.*** Jan., 2-29
Gothic architecture: ***Washington Cathedral: "House of Prayer for All People."*** By Robert Paul Jordan. Apr., 552-573
Gove, Harry 752

Graham, Jim 336
Grand Gulch Primitive Area, Utah: Rock art **111**
Grape growing: Turpan Depression, China 318, 323, 325, 326
Grasses: ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Grasshoppers **149, 160;** Food consumption rate 160; Parasite host 161; Plague (1979): United States 148, 160, 161, infested areas (map) 149
Grasslands: Fort Apache Reservation 273, 280; *see also* Prairie, Tallgrass
Grassle, J. Frederick 1
Gray, Henry 656
Grazing: Prairie, effects on 43, 48, 52
Great Gallery, Horseshoe Canyon, Utah: Rock art **102-103,** 105, **105**
Great Smoky Mountains, N. C.–Tenn. **334-335,** 345
Great Wall of China **314-315;** Fortress 313, **314,** 317; Map locating 298-299
Greece 291; ***Greece: "To Be Indomitable, To Be Joyous."*** By Peter T. White. Mar., 360-393
Agriculture 368, 371, 372, 379, 386; Mechanized farming 375, **378;** Sheep raising 374
Area 368, 371; Island percentage 371
Border changes (1864-1947) 371, 374; Map 371
Border relations 374-375, 379 *see also* Turkish–Greek conflicts
Celebrations: Carnival 373; Holy week **372-373,** 386; St. George festival **360-361**
Civil war 368, 373, 374
Classical period 371, 377, 382, 393; Architecture **366-367, 377;** Navy 377
Coastline 368
Cottage industry 374
Defense 368, 379, 382
Economy 371, 380; Consumer buying 381; Development of 374, 375, 379, goals 379; EEC, member of 360, 379, 386, 391-392
Ferry system 373, 379, **385,** 386, 387; Map 370-371
Government 360, 368, 371, 373, 391, 392; Administration 368, 382, 386, **386,** 391
History 371, 379; Historical sites *see* Ruins, *below;* Wars; invasions 368, 374-375, 377, 379, 393 *see also* Civil war, *above;* War of Independence, World War II, *below*
Industry and commerce 368, 371, 374, 375, 379, 380 *see also* Cottage industry, *above;* Shipping, Tourism, *below*
Maps 370-371
Military dictatorship (1967-1974) 368, 373, 382
National park 375
Natural resources 379
People 360, 368, 374, 380-382, 386, 387, 391, 393; Family unity 373, 380; Population 360, 371, 393
Politics 382, 386, 392
Religions 368, 370, 371, 379, 382; Holy days **360-361, 372-373,** 373, 386
Ruins **365-367,** 368, 372, 373, **377,** 379, 382, 387, **388-389;** Map 370
Rural–urban migration 372, 374, 380
Shipping 377, 385, 387, 391
Shipping tycoons 385, **385,** 387, 391
Territorial waters 371
Tourism 368, 372-373, 380; Tourists 382, 386, 387
Two-part day 360, 380, 385, 392
Villages 368, 372-373, 374, 387, **390-391;** Holy week **372-373,** 386
War of Independence 368, 371, 374, 393
Workers: Greek enterprise 374, 380; Moonlighting 360, 380; Work ethic 380-381; Workers employed abroad (1951-1971) 380; Working hours 360, 380, 392
World War II, and aftermath: Greek decimation 373; Nazi occupation 368, 373, 391; Resistance groups 368, 391
Green, Paul 348
Greenport, N. Y.: Fishing industry 679, 683
Griffin Lucille 343
Grimes, Roff **357**
Grizzly bears: Canada 766
Grosvenor, Gilbert H.: Editor, NGM (1899-1954): First photographic series in NGM 143
Ground birds: Prairie chicken: Cock **54;**
Grub, white **159**
Guinea worms 512, 514
Gulf Coast, U. S.: Texas 445 map note, 450, 451, 457, 460
Gulf Oil Corporation: Grants: NGS television 1
Gull, laughing **824**
Gunnel, penpoint **527-528**
Gustavus II, King (Sweden): Estonian school, founded (1632) 507
Guzman Labor Camp, Soledad Calif. 797; Residents **793**
Gypsy moth 148; Caterpillar **149;** Control methods 157, 162; Range (map) 149

H

Haddada, Tunisia: Hotel 213
Hair dyes, peroxide: Carcinogenic property 179
Hakodate, Japan 92; Aerial view **88-89;** Fish market **70**
Halstatt period (early Iron Age) 431, 438
Hamilton, Edith 291
Hammond, Virginia 561
Han Chinese 299, 317, 321, 322, 323, 326; Language 319, 321
Han Dynasty 299; Desert-irrigation system 313, 323
Hanes, James H. 181
Hann, Elmer 698
Hanseatic League: Estonia 491
Hardwoods, Amazon 699
Harness racing: Neshoba County Fair, Miss. **856-857,** 866
Hart, Frederick **567;** Sculptures by 559, **566-567**
Harvard Biological Laboratories: TCDD studies 182
Harvey, David Alan, photographer: ***Tunisia: Sea, Sand, Success.*** Feb., 184-217
Hata, Masanori 76, **84,** 85, **85**
Hats, cowboy: Custom-made: Austin, Texas **462,** 477
Hatteras, Cape, N. C. 338, **340,** 341
Haul seining: Long Island, N. Y. 666, 683, 684; Opposition to 683-684
Hawk, Swainson's **55**
Haying: China **312-313;** Estonia **580-581**
He Yunqi 327
Healing, spiritual: Apache medicine man 287, 289
Heart of the Canadian Rockies. By Elizabeth A. Moize. June, 757-779
Helicopter production: Fort Worth, Texas 464
Heller, John 735, **736,** 752
Henry, Marguerite 810, 815, 829
Herbicides: ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183; Wild flowers and 52
Hermit crabs **548-549**
Hernandez, Bernie A., Jr. 781, 806
Hernandez, Rocendo 781; Family **793,** 796-797
Herons: Great blue heron **824-825;** Little blue heron **450;** *see also* Egrets
Herrera, David 786
Herring, Jim **862**
Hess, Bill 261, 273, 275; ***Seeking the Best of Two Worlds*** (Apache). Feb., 272-290; photographer: ***Coming of Age the Apache Way.*** Feb., 262-271
Hess, Margie Roosevelt 273, 275, **281,** 289, 290
Hess, O. James 50, **50**
Hess family: Flint Hills, Kans., settlers 50
Hester, Margaret **865**
Hexi Corridor (region), China 298, map note, 313; History 313, 317
Hidaka, Japan: Thoroughbred horses **82-83**
Hidalgo County, Texas: Migrant labor settlements 796
High Plains (region), Texas: Cot-

ton farming 156
High Point, N. C.: Furniture market center 352
Hill, Bonnie, and daughter Cedra 178, **183**
Hinds Junior College, Miss.: Hi-Steppers **862**
Hindu temple: Nepal *see* Pashupati temple
Hinduism: Deity 577, statue **578;** Religious practices 575, 576, 578, 584
Hispanics *see* Mexican Americans
Hmong: Guerrilla fighters **640-641;** Refugees 633, **638-640,** death rate 638, ***One Family's Odyssey to America.*** By John Everingham. May, 642-661; Vietnam War 634, 640, 645
Ho Chi Minh 635
Hobbs, William D. 356
Hochdorf, West Germany: ***Treasure From a Celtic Tomb.*** By Jörg Biel. Mar., 428-438
Hokkaido (island), Japan: ***Hokkaido, Japan's Last Frontier.*** By Douglas Lee. Jan., 62-93
Aboriginal people *see* Ainu
Area 67
Capital *see* Sapporo
Climate 65, 67, 79
Coal and coal mining 81; Miners **80,** bathing **80-81**
Conservation programs 76, 85; Salmon fry release 78, **90**
Farms and farming 62, 65, 73, 74-75; Crops 67; Livestock 62, 65; Rice planting **66-67**
Ferries 88, 91
Fishing industry **70-71,** 71, 86-87; High-seas catch 87; Soviets, disputes with 75, 87-88, 90
Highest point 67
Horses: Draft horses 67, **72;** Thoroughbreds 76, **82-83**
Immigrants 71; Monument to 73
Industry, heavy 81
Map 65
National parks 65, 67, 76, 78-79, **92-93**
Natural resources 67, 71, 81
Skiers and skiing **76-77,** 78; Class **86-87**
Territorial waters 75, 87, 88; Map 65
Volcanoes 78, 91-92
Wildlife 71, 75, 76, **84,** 85, **85**
Holtville, Calif.: Mobile classroom **797**
Holy Cross Parish Council, Mishicot, Wis.: Hmong refugees sponsored by *see* Xiong family
Holy week: Greece 386, Easter Sunday **372-373**
Home to North Carolina. By Neil Morgan. Mar., 333-359
Honeybees: Pesticide casualties 167, 168, **173**
Hopi Indians: Mythology 111; Rain dance 101
Hoppe, Don and Heidi 698
Horn, Anna Goulandris **376**
Horse breeding: Assateague herds 829; Hokkaido (island), Japan 67
Horse racing: Draft horses 67, **72;** Harness racing **856-857,** 866; Thoroughbreds 67, **82-83**
Horses: Draft horses 67, **72, 310-311, 501;** Mongolian ponies **232-234;** Palomino foal **814;** Ranch horses 481, 483; Thoroughbreds **82-83**
Horses, semiwild: Assateague Island, Va. **825, 828,** roundup **814-815,** 828, 829
Horses, wild: Hokkaido ponies **85**
Horseshoe Canyon, Utah: Rock art **100,** 101, **102-103, 105**
"House of Prayer for All People." By Robert Paul Jordan. Apr., 552-573
Houseflies: Pesticide-resistant 151, demonstrated **154**
Houses, underground: Tunisia **212-213**
Houston, Sam 451; Texas revolution 444, 445 map note, 451, 454
Houston, Texas: Mexican Americans 786, 802, 806; Restaurant 781, **785;** ***Texas!*** By Howard La Fay. Apr., 440-483
Commerce and industry 457; Chinese contracts 457; Medicine 457, 460
Cultural and recreational facilities 470, **471, 475**
Employment 457
Founding of 457
International city 457
Medical center 457, 460
Municipal services, lack of 457
Opera company 470
Population 444, 457; Growth 444, 445, 457
Port 445, 457
Suburban sprawl 457, **472-473**
Violence 457
Zoning laws 456, 457
Hover fly **412**
Howard, Thomas Wallace 341
Howell, Hampton 674
Hua Guofeng 300
Huffman, Ned 349
Hui people: China 310
Hulbert, Lloyd 46, 48
Human sacrifice: Phoenicians 201
Human speech, synthesized: Microelectronics 476
Humke, John 42
Humphrey, John 199, 201
Humphreys Avenue School, Los Angeles, Calif. 808
Hungarians: Origins 494
Hunt, Carla: ***Berber Brides' Fair.*** Jan., 119-129
Hunt, Jim 337
Hunt, Nelson Bunker **453**
Hunting: Canadian Indians 769, **769;** Fort Apache Reservation 280, revenue from 279; Wildfowl hunting: Chincoteague Island, Va. 811, 818, 819, 820, 823
Huntsville, Texas: Texas Prison Rodeo, annual **446-447**
Hurricanes: Long Island, N. Y. 671, 674
Huston-Ferguson Apiaries 167, **173**

I

Ice climbers: Canada **611**
Ice field *see* Columbia Icefield, Alberta, Canada
Ice sculpture: "Jaws" **609**
Ice skaters: Mishicot, Wis. **656-657**
Icebreakers: St. Lawrence River 595, 606, 610, 620
Icefields Parkway, Alberta, Canada 767, 779
Iizawa, Mrs. Mitsuko **74**
Illinois: Prairie: Preserves 42, **44, 45,** reestablishing of 52, 59-61, remnants 37; Settlement of 37
Imaging techniques: ***The Mystery of the Shroud.*** By Kenneth F. Weaver. June, 730-753
Imilchil plateau, Morocco: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129
Immigrant workers: Estonia 494, 496, 507; Greeks 380
Immigrants, illegal: United States *see* Aliens, illegal
Imperial Valley, Calif.: Farmworker strike 789, 796; Mobile classroom **797;** Pest-control company 166-167
Imsahan (Uygur) 325-326
In Long-Forbidden Tibet. By Fred Ward. Feb., 218-259
India: Cheetah extinction 712; Tibetan refugees 221, 228, 238
Indian fighting (1870's): Apache 275, 278
Indian grass **36, 45,** 59
Indian reservation *see* Fort Apache Reservation
Indians of North America: Canadian Indians 769, grouse hunter **769,** Mohawks 610, 612-613; Cherokee 333, 336, 345, 451; Corchaug Indians 678; ***Utah's Rock Art: Wilderness Louvre.*** By Gary Smith, with Michael E. Long. Jan., 97-117; *see also* Apache
Indonesia *see* Bali; Tanjung Puting Reserve
Industrial melanism: Moths 400-401, depicted **400-401**
Infrared images: Jupiter **29**
Ingersoll, Andrew 28
Ingram, Morris 866
Inner Mongolia, China: Deserts 304, 305
Insect mimicry and camouflage: ***Deception: Formula for Survival.*** By Robert F. Sisson. Mar., 394-415
Ant mimic and model **394-395,** 395
Anti-mimicry 399
Audio mimicry 412
Butterfly mimics and models 404, **404-407**

Camouflage 394; En masse 410, **411;** *see also* Coloration; Masking; Specialized resemblances, *below*
Coloration: Cryptic coloration 396, **397-403;** Deflective coloration: Eyespots **402;** Industrial melanism 400-401, **400-401**
Masking 396, **396, 397**
Mimicry 394, 399; Mimics and models *see* Ant; Butterfly, *above;* Wasp, *below*
Predators, camouflaged 396, **397, 414,** 415, **415**
Specialized resemblances 394, 398, **398, 399,** 402-403, **403,** 410, **410-411, 414, 415**
Wasp mimics and models 412, **412, 413**
Insecticides: ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
Insects: ***Life Around a Lily Pad.*** By Bianca Lavies. Jan., 131-142; ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
Insects, beneficial: Pesticides, killed by 151, 167, 168, **173**
Insects, introduced *see* Animal introduction
Institute of Desert Research, Lanzhou, China 307, 313, 317
Integrated circuits 474, 476, **477**
Integrated Pest Management (IPM) 156, 157, 162, 164
Intourist (Soviet travel agency) 503
Introduced species *see* Animal introduction; Plant introduction
Io (Jovian satellite): ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Diameter 20
Discovery 11
Distance from Jupiter 20, 23
Erosion 18, 25
Flux tube 10, 16; Diagram **10**
Interior structure 18, 23, 25; Diagrams **19, 20**
Magnetic field, Jupiter's, and 10, 16, 20
Name origin 21
Tidal forces 11, 17, 18, 22, 23
Torus 10, 16, 17; Diagram **10**
Volcanoes **4, 5,** 11, 14, **16-17,** 17, 21, 22, 23, 25, *cover;* Causes, possible 17, 18, diagrams **19;** Discovery 4-5, 11; Size 5, 25
Voyager flybys 13, 21, 22
Iowa: Prairie preserve **38-39**
Irish lord, red (fish) **542**
Iron Age burial: ***Treasure From a Celtic Tomb.*** By Jörg Biel. Mar., 428-438
Irrigation: China 305, 313, 323, 325
Ishikari coalfield, Hokkaido (island), Japan 81
Ishikawajima-Harima Heavy Industries: Jari power plant and pulp mill built by 688, 694, 704
Ismunadji, Benny H. **838**
Italy *see* Turin, Italy

J

Jaakson, Ernst 490
Jackson, John 748, **749**
James Woodworth Prairie Preserve, Ill. **44, 45**
Japan: ***Hokkaido, Japan's Last Frontier.*** By Douglas Lee. Jan., 62-93
Japanese–Soviet border disputes: Kuril Islands 65, 75, 87-88, 90
Jari Florestal e Agropecuária Ltda., Brazil: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Cattle raising 695, 705
Company towns 694, **706-707, 708**
Cost 698, 710
Employees and families 694, 695, 698; Number employed 694, 695
Enterprises *see* Cattle raising, *above;* Kaolin mill, Rice growing, *below; and* Pulpwood cultivation, *outlined*
Kaolin mill 704
Map 695
Native labor used 694, 698
Plants: Paper plant planned 703, 704; *see also* Paper-pulp mill; Power plant, wood-burning
Rice growing 694, 695, 704; Acreage 705, goal 705; Harvesting 705, **710-711;** Planting method 694, 705; Yield 705
Size 694, 699
Transportation 694, 695
Water buffalo 695, 705
Jari River and region, Brazil 688, 693, 694, **708, 709,** 710; Aerial views **690-691, 706;** Hydroelectric dam, proposed 703, 710; Inhabitants 699; Wildlife 693
Jarratt, Jim: Diving suit named for *see* Jim
Jasper, Canada 760, 769, 773
Jasper National Park, Canada: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779
Accommodations: Hotel; Map 762
Ice field *see* Columbia Icefield
Map 762
Overcrowding 760
Recreation, controlled 762
Skiing 763, 769
Snowfall, annual 769
Visitors, number of 773
Wardens, number of 773
Wildlife 757, 760, 762, 773, **777,** 778
Jasper Park Lodge, Canada 769
Jeffords, Michael 406
Jelgobe Fulani tribe: Oursi, Upper Volta 512, **513,** 522
Jellyfish, orange **539;** Reproduction 539
El Jem, Tunisia: Olive oil industry 198; Roman coliseum **186-187,** 197-198
Jennings, Jesse 105
Jerba Island, Tunisia 210; Tourists 207, 209, sunbathers **204-205**
Jerusalem: Cemetery, ancient 747
Jester, Bill **811,** 820, 829
Jester, Donna 828
Jester, Tig **820**
Jesus: Image, possible *see* Shroud of Turin; In art 729, **732**
Jet Propulsion Laboratory: ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Jews, ancient: Burial customs **732,** 743, 749
Jiaohe (ruined city), China **320-321**
Jiayuguan, China 317; Fortress 313, **314,** 317
Jim (diving suit): ***A Walk in the Deep.*** By Sylvia A. Earle. May, 624-631
Communications system 624, 627, 629
Depth record 628
Descent, limit of 631
Emergency ascent method 629
Joints 631
Name origin 624
Owners 624
Pincers **625, 627, 630,** 631
Rebreather system 631
Uses 624
Johnson, Dwayne **290**
Johnson, Jack 298, 319, 327
Johnson, Lady Bird: Beautification programs: Austin, Texas 476
Johnson, Lyndon B. 468, 828
Johnson, Philip 454
Jokhang (shrine), Lhasa, Tibet 228, 231, **242-251,** 243; Buddha statues 231, **246;** Deities **244-245, 251**
Jones, Carole 774, 778
Jones, H. G. 348
Jordan, Mildred **865**
Jordan, Robert Paul: ***Washington Cathedral: "House of Prayer for All People."*** Apr., 552-573
Joseph of Arimathaea 734
Journey to China's Far West. By Rick Gore. Mar., 292-331
Juárez, Al 781, 803
Jumper, Eric 748, **749**
Jungle *see* Amazon Basin
Jupiter (planet): ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Atmosphere 7; Diagram **7;** High-pressure areas *see* Spots, *below;* Jet streams 11; *see also* Clouds, *below*
Auroras 11, 17; Diagram **10**
Clouds 20; Convection 7, diagram **7;** Depth 7, 12; Eddies **2-3, 6,** 11; Velocities 6-7, 11; *see also* Spots, *below*
Composition 7, 12, 16
Day, length of 12
Density 12
Diameter 12, 13
Galilean moons: "Despinning" of 27-28; Discovery 5, 11, 29; Magnetic field, Jupiter's, and

10, 16; Sizes, relative **20;** *see also* Callisto; Europa; Ganymede; Io, *outlined*
Great Red Spot **6,** 7, **7,** 20, 28, **29;** Age 8; Chemistry 8; Close-up, false-color **8-9;** Size 9; Velocity 6, 7
Infrared image **29**
Life, possible 28
Lightning 11, 28
Magnetic field 10, 16-17, 20; Bow shock 10, 17, 20; Diagram **10;** Galilean moons and 10, 16; Size 16
Mass 12
Moons (satellites) 11, **11;** Name origins 20-21; Number 11, 14; *see also* Galilean moons, *above*
Name origin 12
Orbit 12
Organic molecules 8, 11, 28
Ring 11, 14, **14-15;** Composition 11, 17; Discovery 14; Painting of **14-15**
Spots **2-3, 6-7,** 7, **8-9,** 20, 28, **29;** High-pressure areas 8, 9, 28; Migration 7; Velocities 6; *see also* Great Red Spot, *above*
Storms *see* Spots, *above*
Temperature 12
360° pictures **6-7**
Time-lapse films 7, 20; Thumbmovie **7-29**
Voyager flybys 13
Year, length of 12
Just Room Enough (island), Thousand Islands, Canada–U. S. **592**

K

Kadowaki, Kunio 65
Kahn, Ephraim 166
Kaiho, Mineo 71
Kairouan, Tunisia 199, 209; Mosque 188
Kaji, Tetsuro 78
Kamel (Kazak) 330
Kampuchea (Cambodia): Deaths since 1975, estimated 633, 634, 637; Famine 634, 637, 639, 642; Forced evacuation of cities 641; History 635; Vietnamese invasion of 634, 635, 642; *see also* Cambodian refugees
Kansas: ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Kaolin: Uses 703, 704
Karamanlis, Constantine 382, **386,** 391, 392
Kasserine, Tunisia 197; Tourists 208-209
Kasserine Pass, Tunisia: World War II 184
Kastellorizon (island), Greece **374-375**
Kastoria, Greece 374; Fur workshops 374
Kathmandu, Nepal: ***Temple Monkeys of Nepal.*** By Jane Teas. Apr., 575-584
Katsui, Yoshio 91
Katydid: Camouflage **410**
Kayano, Shigeru 73
Kazaks: China 321, **323-326,** 327, **328-329,** 330, campsite **324-325,** 330
El Kef, Tunisia: Apartment construction **196-197**
Keller, Helen: Tomb 565
Kelly Air Force Base, San Antonio, Texas: Mexican-American workers 794, **799**
Kennedy, John F.: Assassination 470
Kennedy, Tom 657
Kennelly, Bob 670-671
Kenney, Nathaniel T.: ***Chincoteague: Watermen's Island Home.*** June, 810-829
Kesang Wangdui 238
Kettlewell, H. B. D. 400-401
Khieu Samphan 633
Khmer Rouge (communist group): Kampuchea 634, 641
Kidd, Capt. William 666, 680
King, Martin Luther, Jr. 562
King James Bible: Original copy 559, 566
Klick, Ken 37-38
Kohl, Larry: ***British Columbia's Cold Emerald Sea.*** Apr., 526-551
Kohtla-Järve, Estonia 507
Kojima (island), Japan: Aerial view **68-69**
Kokernot, Herbert 481
Komotini, Greece: Muslims 379
Konza Prairie, Kans. 46, 48, **48-49**
Kooning, Willem de 668, **670**
Korte, Clarence 161, 162, 168; Organic farm 161, **168, 169;** Sons **168**
Kreutzwald, F. R. 495
Kross, Jaan **504**
Künkel, Reinhard "Leo" 725
Kuralt, Charles 348
Kure, Japan: Jari pulp mill and power plant, assembled 688, 694, 704
Kuril Islands, U.S.S.R.: Japanese–Soviet territorial dispute 65, 67, 75, 87-88, 90
Kutzer, Paul 763

L

Laas, Tiit and Katrin 498
Labor unions: North Carolina 354
Lachine Rapids, St. Lawrence River 604; Canals bypassing 604
Lacy, Chris **441,** 481
Lacy, Diane 483
La Fay, Howard: ***Texas!*** Apr., 440-483
Lahemaa National Park, Estonia 503
La Joya, Texas: Farm workers 796
Lakers (ships) 604, 619
Land conservation: Long Island, N. Y. 676
Land Cruiser, Toyota 712, 716, **717,** 718
Land grants: Texas: Mexican grants (pre-1836) 450; U. S. grants (1876) 791
Land reclamation: China 304, 326; Estonia 507
Land reform: Tibetan redistribution 231, 250, 251
Land use: Brazil 704; ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Language: Human speech synthesized 476
Lanzhou, China 299; Air pollution 311, 318; Barbershop 318-319; Income, worker's 317; Industry 299, 311, 318; Population 299, 311; Transportation **310-311**
Lanzhou Institute of Desert Research, Lanzhou, China 307, 313, 317; Wind tunnel **306**
Laos: History 635; Pathet Lao 634, 647; Reeducation camps 633, 638
Laotian refugees: Thailand **632,** 633, 638, number of 638; *see also* Hmong
Laredo, Texas: Border crossings, annual 798
Laredo News: Publisher 781, **784**
Lark, horned 54; Nestling **54**
Lassiter, Abbott and Shep **821**
Latvia: Soviet annexation of 490, 490 map note
Laurenzo, Ninfa 781, **785**
Lavies, Bianca, photographer: ***Life Around a Lily Pad.*** Jan., 131-142
Leakey, L.S.B. 835
LeCompte, Rowan **568;** Stained-glass window **568, 569**
Lee, Douglas: ***Hokkaido, Japan's Last Frontier.*** Jan., 62-93
Lee, Howard 349
Leech, turtle **139**
Leibfried, Renate 430
Leland, Bill **666**
Lemieux, Peter 769
L'Enfant, Pierre Charles 552, 554
Lenin, Nikolai **484**
Lent: Greek Orthodox church 373
Leo, Leo J. 796
Leonard, Donald 818
Leonidas, King (Sparta) 393
Les Escoumins, Canada 623
Lévesque, René 600, 601
Lhasa, Tibet 143; ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259
Aerial views **222-223**
Altitude 219, 223
Architecture **226-227,** 240
Climate 248
Dalai Lama's palace *see* Dalai Lama: Palaces
Development 223, 226, 240
Hospital 253
Name, meaning of 221
Shrine *see* Jokhang
Liang Kuangyi 327
Life Around a Lily Pad. By Bianca Lavies. Jan., 131-142
Lighthouses: Montauk Point, Long Island 666
Lightning: Jupiter 11, 28

Lily pad: ***Life Around a Lily Pad.*** By Bianca Lavies. Jan., 131-142
Lingcod **542-543**
Lints, Juhan **501;** Mother **500**
Linville, N. C. 345
Linzhou State Farm, Tibet **228-229,** 250-251, 254; Militia troop **232-234**
Lions: Mating 728
Lirey, France: Shroud of Turin 734
Lithuania: Soviet annexation 490, 490 map note
Little Island, Japan: Aerial view **68-69**
Livanos, George P. **385**
Living With the Great Orange Apes: Indonesia's Orangutans. By Biruté M. F. Galdikas. June, 830-853
Lockwood, C. C., photographer: ***Mississippi's Grand Reunion at the Neshoba County Fair.*** June, 854-866
Loess: China 301, 304
Loetscher, Ila **451**
Logan Barrio, San Diego, Calif. 806
Long, Michael E.: ***Utah's Rock Art: Wilderness Louvre.*** By Gary Smith, with Michael E. Long. Jan., 97-117
Long-eared Owls—Masters of the Night. By Art Wolfe. Jan., 31-35
Behavior 31, 32
Calls 31
Camouflage 31
Diet 31, **32, 35**
Ear tufts **30,** 31, **34**
Eggs **32;** Clutch size 32
Enemies 31
Hearing 31
Height and weight 34
Name origin 31
Nests 32
Range 31
Subspecies 31
Wingspan 34
Young 32, **32-35**
Long-eared owls, western **30,** 31
Long Island, N. Y.: ***Long Island's Quiet Side*** (East End). By Jane Snow. May, 662-685
Artists and writers 668, 669, **670, 671**
Beaches 665, 670; Beach houses **662-663,** 670, 674, **684-685**
Boating **668,** 679
Duck industry 676, **677,** 678
Erosion 666, 670, 682
Farms and farming 666, 675, 678, 679; Land preservation 676
Fishing industry 662, 666, 679, 683; Haul-seining 666, 683, 684
Formation 666
Hurricanes 671, 674
Map 669
Seafood 666, 676, 679
Settlers 662, 665, 674, 681, 684
Sportfishing 666
Summer people 665, 668, 669
Water supply 675
Long Island Rail Road 665
Long Island Sound: Sailboats **668**
Long March (1934-1935): China 292, 318; Torchlit relay commemorating **295-297,** 318
Loopers: Cabbage looper **162,** viral control of 162, **162;** Camouflage: Masking 396, **396, 397,** specialized resemblance 398, **398, 399**
Lopez, Elias **807**
Losang (Tibetan) 238, 240
Losang Phintso 228, 231
Los Angeles County, Calif.: Mexican Americans 786; *see also* East Los Angeles, Calif.
Los Angeles Sante Fe Terminal Market, Los Angeles, Calif. 175, **176**
Louise, Lake, Banff National Park, Canada 760, 767, 779; Elevation 767; Ski area 771
Lowestoffe, H.M.S. (warship) 610
"lowriders" 800, **806-807**
Lubbock, Texas: Electronics industry 474
Lucas Gusher (oil well), Beaumont, Texas 460-461
Ludwig, Daniel Keith: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Luján, Secundino: Texas land grant 791
Lumbering: Fort Apache Reservation 277, 278, 283, 290
Lupe, Carolyn **270**
Lupe, Ronnie **260,** 270, **270,** 275, 278-279, 283, 287, 290; ***At Peace With the Past, In Step With the Future*** (Apache). Feb., 260-261

M

M. D. Anderson Hospital and Tumor Institute, Houston, Texas 460, **476**
Ma, Larry 299
Macaque **838**
McConkie, Sadie 112
McCoy, Dan 345
McCrone, Walter C. 751
MacDonald, Cecil 704
Macedonia (region), Greece 374-375, 379
McGee, Cork 817
Machuse, Edwin **272**
McIntyre, Loren: ***Jari: A Billion-dollar Gamble.*** May, 686-711
Mackenzie, Jake 166
Mackerel, Atka **70-71**
McKnew, Thomas W. 555, 562-563
McKnight, C. A. "Pete"352
McMillan, James B. 349, 352
McNeill, William H. 380
McNulty, Wilbur 182
MacPherson, J. R., and daughters **815,** 829
Maddy, Keith T. 177, 178
Madrid, Lucia 791
Mägi, Tõnis 495
Mahlberg, Melissa **46**
A Maiden Comes of Age (Apache). By Nita Quintero. Feb., 262-271
Major, William 278
Malarial-mosquito reduction: DDT and 151
Malayan sun bear: Cub **847**
Mallebe Fulani (tribe): Oursi, Upper Volta 514, 517, 525
Mani (district), Greece 368, 372-373; Family feuds 368; Fortifications 368, 372
Mantispid 412, **413**
Mao Zedong 292; Decanonization of 300
Map supplements:
Africa; Africa, Its Political Development. Feb. supplement
Close-up, Canada: Quebec, Newfoundland. May supplement
Maps:
Africa; Africa, Its Political Development. Feb. supplement
Canada: Banff and Jasper National Parks 762; *Close-up, Canada: Quebec, Newfoundland.* May supplement; Georgia, Strait of 532; St. Lawrence River 594-595
China, western 298-299
Estonian S.S.R., U.S.S.R. 490
Fort Apache Indian Reservation, Ariz. 261, 276
Greece 370-371
Indonesia, locating Bali 419
Japan: Hokkaido (island) 65
Long Island, N. Y.: East End 669
Maryland: Assateague Island 812
Morocco: Imilchil located 120
North Carolina 336-337
Texas 444-445
Tibet 221
Tunisia 193
United States: Midwest 43; Southwest 786
Utah: Rock art sites 101
Virginia: Assateague and Chincoteague Islands 812
Marcus, Stanley **452**
Mardirosian, Vahac 786
Marijuana: China 311
Marine biology: ***British Columbia's Cold Emerald Sea.*** By David Doubilet. Apr. 526-551; Pacific Ocean: Hawaiian Islands region 628-629, 631
Markets: Fish market: Hakodate, Japan **70;** Furniture market: High Point, N. C. 352; General store, backcountry: Canada **768;** Kiosks: Athens, Greece 381, **381;** Oursi, Upper Volta 522; Produce market: Estonia **497,** 500
Marriage customs: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129; Greece 380; Tunisia 188
Marsh, Stan 470, 474
Marshes *see* Salt marshes
Martin, Charles 571

Martin, Richard G. 460
Martinez, Ana Maria 808
Martinez, Gabriel **798**
Maryland *see* Assateague Island, Md.-Va.
Masursky, Harold 18, **18**, 22, 23
Matmata, Tunisia: Underground homes **212-213**
Matthews, Georgianne **797**
Maui Divers, Inc.: Transport **626-627**
Maze, Stephanie, photographer: ***The Mexican Americans: A People on the Move.*** June, 780-809
The Maze: Canyonlands National Park, Utah 105, **106-107**
Mead, Margaret 424, 512, 514
Mead's milkweed: Rare plant 42
Mecklenburg County, N. C. 352
Medicine and health: Cancer treatment 460, 476; Duke University Medical Center **344; *The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183; Texas Medical Center facilities 457, 460, **476**
Medicine men, Apache 261, 262, **267, 269,** 278, **284,** 285, 287, 289-290
Meguro, Hiroichi 73
Meguro, Jinkichi 73
Meguro, Yutaka and Naoko 73, 74
Melas, Pavlos 375
Melina (Asian tree) 695, 696, 698, 699, **700-701,** 704; Logs **702-703;** Paper-pulp tested 704
Melo, João 693, 694
Mencken, H. L. 348
Mendoza, Francisco 802-803
Menton, Dorothy **483**
Merchant ships: Greek fleet 377, 385, 387, 391
Meselson, Matthew 181, 182-183
Mesquite, Texas: Rodeo 447
Metamorphosis: Insects 134, **134,** 138, 139, **139;** Tadpoles 132-133
Meteora (region), Greece **362-364**
Methodist churches: Chincoteague Island, Va. 810, 820; Rural North Carolina 334
Methyl parathion: Encapsulated 168, **172**
Metsovon, Greece 374
Mexicali, Mexico: Border fence **791**
Mexican Americans 444, 461, 480-481; ***The Mexican Americans: A People on the Move.*** By Griffin Smith, Jr. June, 780-809
Appellations 786
City dwellers 781, 791, 792, 794, 796, 802-803
Cultural pride 786, 802, 808
Education: Bilingual instruction 806, 808
Family 785-786
Farm workers **788-789, 792-793,** 796-797
Folk healer **795**
Illegal aliens 786, **790,** 791, 797-798, 800-801
Legal residents 786
Median income 781
quinceañera celebrations 786, **808**
Religion 781, 791, 792, 794
Separatists 794
Mexican immigrants, illegal 477, 478, 480, 786, **790,** 791, 797-798, 800-801
Mexico: Cotton crop losses to cotton pests (1960s) 151, 156; Independence (1821) 444, 450; Oil reserves 585; Texas revolution 444, 445 map note, 450-451, 454, casualties 451, 454; Unemployment rate 477; United States and 585
Mexico, Gulf of: Ports 445 map note, 457
Mexico-United States border 477; Fences 477, **478, 791;** Illegal crossings 477, 791, 798, 800-801; Length 798; Map 786
Mey Kom Pot 641
Mice: Chemical-exposure tests, used in 157, 179
Microbes: Biological pest-control, used in 162, 167; Carcinogen testing, used in 179; Pond bacteria 131; Soil microbes: Depletion of prairie's 59
Microelectronics 474, 476, **477**
Midges **138**
Midland, Mich.: Dow Chemical plant 178, **181;** TCDD contamination near 178
Midwest (region), U. S.: ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Migrant workers: United States 796-797, mobile classroom **797,** settlements 796
Milkweed, Mead's 42
Miller, Charles R.: ***Life Around a Lily Pad.*** Jan., 131-142
Miller, Milt 662
Miller, Peter: ***Bali Celebrates a Festival of Faith.*** Mar., 416-427
Millionaires: Greek shipping tycoons 385, **385,** 387, 391; Texas **453;** *see also* Ludwig, Daniel Keith
Mimicry: ***Deception: Formula for Survival.*** By Robert F. Sisson. Mar., 394-415
Miners, coal: Hokkaido (island), Japan **80,** bathing **80-81**
Ming Dynasty: Great Wall built by 314
Minjarez, Marcelo 284
Minjarez, Vina 284
Minnesota: Settlement of 46
Mirex (insecticide): Banned 160; Fire ants, used on 160; Hazards 160
Miscarriages: Herbicide relation, possible 178, 182, 183
Mishicot, Wis.: Hmong *see* Xiong family
Missions, Spanish: Texas *see* The Alamo
Mississippi State University: Mosquito research **167**
Mississippi's Grand Reunion at the Neshoba County Fair. By Carolyn Bennett Patterson. June, 854-866
Mitchell, Michael 610, 612, 613
Mitchell, Mount, N. C. 336, 343
Mites: European red mite 148, **149,** 151, range, U. S. (map) 149; Oranges, effect on 175
Mohawks: Canada 610, 612-613, tollgate 610
Moize, Elizabeth A.: ***Heart of the Canadian Rockies.*** June, 757-779
Molpus family: Neshoba County Fair, Miss. **866**
Monasteries: Buddhist 228, 231, 238, 254; Greece **363-364,** Athos, Mount (theocracy) 370, **382, 383**
Mondale, Walter **570**
Mongolian ponies **232-234**
Mongols: China 304
Monkeys: Chemical-exposure studies 179, 181, 182; ***Temple Monkeys of Nepal.*** By Jane Teas. Apr., 575-584
Monks: Buddhist: ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259; Eastern Orthodox Church **382**
Monopoly set, chocolate **452**
Mont Sainte-Marie (cargo vessel) 616, 618
Montauk, Lake, N. Y.: Channel 666, 668
Montauk, N. Y. 666, 668, 682, 683, 684
Montauk Indians 680, 681
Montauk Light, Long Island 666
Montauk Point: Erosion 666
Monte Dourado, Brazil 694, 695; Aerial view **706-707**
Montgomery, Steve 415
Montmorency River, Canada: Waterfall **611**
Montreal, Canada: ***The St. Lawrence River, Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623
Moon rock: Space Window, Washington Cathedral 563, 566, **568**
Moose: Canada 760, **777**
Morabito, Linda 4-5, **5,** 22
Moran, Thomas 668
Moravians: North Carolina 349
Morgan, Neil: ***Home to North Carolina.*** Mar., 333-359
Morgan, S. L. 349
Morigi, Roger 566
Morocco: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129
Morton, Hugh 345, 358
Mosaics, third-century: Tunisia 197, 198-199
Mosquitoes: Eradication methods used on 151, **167**
Moths: Adaptive coloration 400-401, **400-401;** Mimicry experiment, used in 406-407, **406-407**
Moulay Mouha 122; Family of **122**
Mountain formation: Plate tectonics and 769
Mountain goats: Canada 760, **777,** 778

M'sahli, Said (Sheikh) 210, 213
Mules: Plowing **346**
Mundus, Frank 666
Munguba, Brazil 695, 704; Aerial view **707**
Muñoz, Henry, Jr. **785**
Mural: Washington Cathedral **570-571**
Murillo, Andres **144,** 145, 148, 166
Music: Country and western singer 446, **467,** 470, 483; Country and western song: Excerpts from 444, 446, 450, 460, 464, 470, 476, 481, 483
Music festival: Estonian Laulupidu 501-502, director **492,** 502
Musical instruments: Flutes: Rock art, Utah **110-111;** Percussion: Rattles and drums: Tunisia **210-211**
Muslims: China 292, 310, 317, 321, 324, 326; Greece: Color symbolism 379, Musulmani 379, Pomaki 379; Indonesia 419
Musselman, Jack 175, 176
Mutation: ***Deception: Formula for Survival.*** By Robert F. Sisson. Mar., 394-415
The Mystery of the Shroud. By Kenneth F. Weaver. June, 730-753

N

Nagasaki, Tetsuzo **75**
Naka-Usu (volcanic peak), Hokkaido (island), Japan 91
Nan Tang Cathedral, Beijing, China 331; Communion **330;** Confessional **331;** Mass 331
Nasher, Raymond **453,** 468
National Aeronautics and Space Administration (NASA): Aircraft wing-design research 152-153, test model **152-153;** ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
National Cathedral, Washington, D. C. *see* Washington Cathedral
National Cathedral School, Washington, D. C. 562; 1979 graduating class **572, 573**
NATIONAL GEOGRAPHIC (NGM): First photographic series 143
National Geographic Society: Board of Trustees: Advisory Chairman 563; Chinese desert expedition (1979) 292, 298; Flag: Diving suit test **625;** Grants: Orangutan research 835, rhesus monkey study 576, 577; Television: Program announcements: 1980 season 1, "Dive to the Edge of Creation" (January), "The Invisible World" (March), "Mysteries of the Mind" (February), "The Superliners" (April); *see also* Books, NGS
National Humanities Center, Research Triangle Park, N. C. 348
National parks: Canada: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779; Greece 375; Hokkaido, Japan 65, 67, 76, 78-79, **92-93;** Proposed *see* Tallgrass Prairie National Park; Soviet Union, first in 503
National Republican Greek League (resistance group) 368; Member **369**
National seashore: Assateague Island, Md.-Va. 822, map 812; North Carolina 341
National wildlife refuges: Assateague Island, Md.-Va. 812, 822-823, **824-825,** 828, 829; Nebraska **58**
Natural gas: Texas 444, 457
Natural resources: ***Hokkaido, Japan's Last Frontier.*** By Douglas Lee. Jan., 62-93; ***Seeking the Best of Two Worlds*** (Apache). By Bill Hess. Feb., 272-290
Nature Conservancy (U. S.) 42; Prairie preservation 42, 46
Nava, Julian 785
Nazi Germany *see* Germany, Third Reich
Nebraska: Prairie remnants 43; Wildlife refuge: Elk **58**
Neck ring, gold: Celtic tomb **434,** 438
Necklace, coin **513**
Nefta, Tunisia: Muslim festival **210-211;** Tourists 208
Neiman-Marcus (store): Catalog offers **452**
Nelson, Willie 446, **467,** 470, 483
Nemeth, Alyx 775, 778
Nepal *see* Kathmandu
Neptune (planet): Diameter 13; Voyager flyby, possible 12, 28
Neshoba County Fair, Miss.: ***Mississippi's Grand Reunion at the Neshoba County Fair.*** By Carolyn Bennett Patterson. June, 854-866
Net fishing: Oursi, Upper Volta 518, **518-519;** *see also* Gillnet fishing; Haul seining
New Bern, N. C.: Tryon Palace 341
New Mexico: Mexican Americans 784
New York *see* Long Island
Newfoundland (province), Canada: ***Close-up, Canada: Quebec, Newfoundland.*** May supplement
Newts, red-spotted 131; Courtship **130**
Nicklin, Chuck, photographer: ***A Walk in the Deep.*** May, 624-631
Niit, Ellen **504**
Ninfa's restaurant, Houston, Texas 781, **785**
Ningxia (autonomous region), China: Muslims 310, 326
Nobel Prize winners: Chemistry (1979) **157;** Literature (1979) 393
Nocturnal animals *see* Owls
Nomadism: Tunisia 192, 217
Nong Khai (refugee camp), Thailand: Laotian refugees 638
Norodom Sihanouk, Prince (Cambodia) 633
Norquay, Mount, Canada **770-771**
North Africa *see* Morocco; Tunisia
North America: Geological history 619, 767, 769; *see also* Canada; Mexico; United States
North American alliance, need for 585
North American Indian Travelling College 612
North Carolina: Boll weevil control program 156, 157; ***Home to North Carolina.*** By Neil Morgan. Mar., 332-359
Agriculture 336-337, **346-347;** Crops 336-337, 346, 356, map 336-337
Capital *see* Raleigh
City, largest *see* Charlotte
Colleges and universities 337, 345, 348, 349, 354
Corporations 337, 348, 352, 354
Facts and figures 336
Flag **336**
Geographic regions 343; Coastal plain 336, 337, 341, 343; Mountains **334-335,** 336, 343, 345; Piedmont plateau 335, 336, 343
History 336, 338, 341
Indians 336, 343, 345
Industry 335, 337, 343, 352; Furniture 336, 352, 358; Textiles 336, 352, 354; Tobacco 336, 337, 354, 356, **356, 357**
Map 336-337
Nickname 336, 338
Population 335, 343
Race relations 349, 352
Religion 334, 343, 351; Revival meeting **351**
Research park 337, 345, 348-349
North Carolina School of the Arts, Winston-Salem 354
North Carolina State University 337, 345, 348
North Haven (peninsula), Long Island, N. Y. 683
Northampton County, N. C. 345; Physician **345**
Nosema locustae (grasshopper parasite) 161
Nouira, Hedi 207
Nudibranchs **538**
Nuestra Señora de Guadelupe (church), San Antonio, Texas 792; Bulletin board **794;** Fiesta 791
Numbers, sacred: Apache Indians 269, 285, 289; Balinese 419, 421, 426
Nuri, Mohamed 192, 197
Nuytten, Phil 624

O

O-6 Ranch, Alpine, Texas 440, **480-481,** 481, 483
Oba, Tomeyo **64**
Obihiro, Japan 73; Draft-horse race **72**
Ocean liners, historic 1

Oceaneering International, Inc.: Jim (diving suit) 624
Ochoa, Angelita, and family **803**
Ocracoke (island), N. C. 341
Octopuses 540; Giant octopus **541**
Oil companies: Houston, Texas 457, Petroleum Club **475;** Montreal, Canada 622
Oil production: Algeria 191; Libya 191; Texas 444, 460, 474; Tunisia 191
Oil prospecting: Tunisia 213, **214-215,** 217
Oil refinery: Canada 622
Oil reserves: Canada 585; Mexico 585
Oil-shale mining: Estonia 496, 507
Oil spill: Gulf of Mexico 445 map note; Wildlife rescue 451
Oil-well pump: Padre Island, Texas **474**
Oinousai (island), Greece: Shipping millionaires 387, 391
Oja, Olev **511**
Old Salem (restored), N. C. 349
Olive oil: Tunisia 198
Olive trees: Life span 198
Olympia, Greece **388-389**
Olympic games: Gold-medal winner (1968) 206; Site of first (776 B.C.) **388-389**
Olympic Games (1980): Estonia: Sailing-race site 491, **491**
One Family's Odyssey to America. By John Everingham. May, 642-661
Onsager, Jerry 161
Orangutans: ***Living With the Great Orange Apes: Indonesia's Orangutans.*** By Biruté M. F. Galdikas. June, 830-853
  Adolescent behavior 832, 836, **848,** 849
  Birth 836, 837, 844; Rate 837, 843, 852
  Communication: Sign language **838, 839,** 845, 846, 849
  Endangered 830, 835, 843, 852
  Feeding habits **834,** 836, **842,** 851, 852
  Infant behavior 832, **836,** 837, 843, 845, **850, 853;** Weaning 837, 850
  Male aggressiveness 830, 838, 840, 841, 846
  Maternal behavior 836, 837
  Mating 837, 838, 840, **842,** 843, 844, 852; Mating call 838, 840, 843
  Name meaning 835
  Protection of 832, 843, 852
  Research support 835
  Solitary nature 832, 835, 836, 837, 851
  Study area: Map 832
  Tool-using 832, 845, 846, **846,** 852
Ordway Memorial Prairie, S. Dak. **40,** 42, **60-61**
Oregon: Herbicide contamination 178, 182
Oregon Regional Primate Research Center, Beaverton, Oreg. 182
Organic farming: Pocahontas, Ill. 161-162, **168, 169**
Orleans, Île d', Canada: Farm **612-613**
Ortelius, Abraham: Map of Africa (1750) Feb. supplement
Orton (plantation), N. C. 338
Ospreys **777**
Otterbein, Adam J. 749
Ottoman Empire: Decline of 379; Greece 368, 371, Greek revolt 368, 371, 374, 393
Oursi, Upper Volta: ***Oursi, Magnet in the Desert.*** By Carole E. Devillers. Apr., 512-525
  Aerial view **516-517**
  Bella 514, 519, **519, 524-525**
  Cattle 518, 521, 522, 525; Drought season 514, 515, 524; Symbol of wealth 515, 522
  Character of the people 512, 519, 521, 522; Hospitality 512, 518, 525
  Chief 512, 514, 518, 525
  Children 518, 520, 521-522, **524-525,** 525; Fishing 518, **518-519;** Infant mortality 524
  Climate 514, 515, 517, 523; Sandstorms 520-521, **522-523**
  Diseases 512, 514, 524
  Ethnic groups 514, 522 *see also* Bella, *above;* Fulani; Songhai, *below*
  Farms and farming 525; Crops 523, 525
  Fishing 518, **518-519**
  Food 515, 518, **518,** 519, 520, 522
  Fulani 512, **513,** 514, 515, 516, 522, 524, 525
  Goats 518, **520-521**
  History 514
  Lake 514, **516-517,** 518, **518-519,** 520
  Market 522
  Population 512, 516
  Religion 514
  Songhai 514, 516, 518, 525
  Water birds 517, 518, 520
  Women 514, 519, 520, 522, 525
Outer Banks, N. C. 337, 338, **340,** 341, **341**
Ovando, Carlos 785
Owls: ***Long-eared Owls—Masters of the Night.*** By Art Wolfe. Jan., 31-35
Oxen: China **304,** 305
Oxygen sources 699
Oyster beds: "rocks:" Chincoteague Island, Va. 812, 817, 820
Oyster drills 818
Oysters; oyster farming: Chincoteague Island, Va. 810, **812,** 817-818, 820

P

PTL Club (television show) 351
Pacific Ocean: Deepest point 631; Ocean floor: Thermal vents 1
Pack trip: Jasper National Park, Canada 774-775, 778-779
Packard (automobile): 1936 convertible **665**
Padre Island, Texas **474**
Painting, Chinese: Brick painting **305;** Cave paintings 313
Palace *see* Potala
Palomino foal: Chincoteague Island, Va. **814**
Pandolfo, Clara 699, 704
Papandreou, Andreas G. 382, **387,** 392
Paper-pulp mill: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
  Assembly of 688, 694, 704
  Control room **702**
  Cost 694
  Placement **689,** 690, **691,** 694; Accuracy 690
  Production 694, 703; Value 694
  Size 688
  Transport of **686-688,** 690, 694; Route map 688
Paper shortage: Predicted 698, 701
Parasites: Guinea worm 512, 514; Leech **139;** Schistosome 514
Parks: "Water Garden," Fort Worth, Texas **454-455;** *see also* National parks
Pärnu, Estonia: Sanatoriums **508-509,** 509
Parthenon (ruins), Athens, Greece **366-367**
Parti Québécois: Independence plan 600-601; Leaders **598**
Particle accelerator: Illinois 45, 59
Partridge, Michael **860**
Pashupati temple, Kathmandu Valley, Nepal: Rhesus monkeys 576, 577, **578-579, 582-583**
Pasqueflowers **54**
Pathet Lao (Communist group): Laos 634, 647
Patras, Greece: Carnival 373
Päts, Konstantin 485, 489
Patterson, Carolyn Bennett: ***Mississippi's Grand Reunion at the Neshoba County Fair.*** June, 854-866
Peconic Bay, Long Island, N. Y. 664, 678
Peconic County, N. Y.: Proposed 669, 684
Pedernales (river and region), Texas **468-469**
Pekin ducks: Long Island, N. Y. 676, **677,** 678
Peking, China *see* Beijing
Pelicans (*P. crispus*) 375
Pell, William, III 679
Pellicori, Samuel **741,** 751
Peloponnesus (region), Greece 368, 372-373
Peng Bo State Farm, Tibet **230, 231,** 249, 250; Shepherdess *cover*
Peppered moth: Adaptive coloration **400, 401**
Perry, Charles A. 562
Perry, Edgar 284, 285, 290
Persian-Greek wars 377, 393
Pesek, Ludek: Painting by **14-15**
Pest control: Biological control

156, **156,** 157, 161, 162-165, 167; Integrated control 156, 157, 162, 164; Predation, insect 160, 161, **168, 171;** *see also* Pesticides, *outlined*
Pesticides: ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183
Benefits vs. dangers 145, 148, 150-151; Crop losses if use discontinued 162
Carcinogenicity of 157, 160, 177, 178, 181
Food-chain accumulation 151
Food contamination 175, 177; Produce inspection 175, **176,** 177
Human exposure to 145, 150; Application methods and 148, 153, 167, 168, aircraft **146-147,** 150, 163, 166, 167, **174-175,** research 152, **152-153,** 153; *see also* Carcinogenicity of, Food contamination, *above;* Poisonings, *below*
Insects, beneficial: Decimation of 151, 160, 167, 168, **173**
Poisonings 145, 148, 150, 166; Deaths 150; Litigation 145, 148, 166; Symptoms 166
Regulations covering 150, 151, 166, 167, 175; Residue limits 175, 177
Resistance to, evolved 148, 151, 154-155, 158; Illustrated **154**
Statistics: Application figures, annual (gallons; tonnage) 147, 148, 157; Marketing cost 150; Number marketed 145
Testing procedures 145, 150, 179
Water contamination 177-178
Peter the Great (Russia): Estonia, conquest of 494-495, 502
Pétoye, Upper Volta: Bella children **524-525**
Petrochemical industry: Lanzhou, China 299, 311, 318
Petroglyphs *see* Rock art
Pheromones: Insect control and 156
Philip, H.R.H. The Prince, Duke of Edinburgh 566
Phillips family: Duck hatchery 676, 678
Phnom Penh, Kampuchea 634, 635; Forced evacuation 641
Phoenicians: Carthage 188, 199, 201
Photography: Photomicrography 1; Positive-image negative 729, 743, 752, **753;** Stereometric photography **748;** *see also* Shroud of Turin, *outlined*
Phylactery, forehead: Shroud of Turin research **749**
Pia, Secondo 743, 752
Pickerel frog **140;** Poison 141
Pike, Zebulon M.: Journal quoted 51
Pilgrims: Bali **420-421**
Pilling, Clarence 112
Pimentel, David 162
Pina, Harvey **273**
Pinto ponies: Assateague Island, Va. *see* Horses, semiwild
Pioneer missions: Jupiter images 11
Pipe-vine swallowtail (butterfly) **404-405;** Mimics of **405, 406, 407**
Pirita, Estonia 485, 489, **492,** 493; Vesilind home, state-owned 493, **493**
Pirita River, Estonia 489, **492**
Planets: Sizes, relative **12-13;** Voyager flybys 12, 13, 28; *see also* Jupiter, *outlined*
Plant diseases: Biological control 164, 167
Plant hoppers, larval: Camouflage **411**
Plant introduction: Corn into China 301; "hitchhiking" weeds 59; Tallgrass prairie 48, 52, 59
Plant medicine: Snakebite cure 37
Plant preservation 42; Seed gleaning 37, 45, 59
Plants: Camouflage 394, **410;** ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Plate tectonics: Mountain formation 767, 769; Ocean floor 1
Plewes, Heather 766
Plum Island, N. Y.: USDA research 680
Poaching, duck (1940's): Chincoteague Island, Va. 819, 824, 826
Pocahontas, Ill.: Organic farming 161, **168, 169**
Pointe-Jaune, Canada **588-589**
Poison, deadliest man-made 178, 181, 182
Pol Pot 633, 634, 642
Poland: German invasion of (1939) 485
Politics, world 291
"pollination crisis": Honeybee casualties and 167
Pollution: Animal adaptation and *see* Industrial melanism; St. Lawrence River, Canada-U. S. 613, 620; *see also* Air pollution; Chemical pollution; Water pollution
Polygamy: Tibet 254
Pomaki (Muslims): Greece 379
Pond life: ***Life Around a Lily Pad.*** By Bianca Lavies. Jan., 131-142
Ponies: Assateague Island, Md.-Va. *see* Horses, semiwild
Pony Penning Week: Chincoteague Island, Va. 828, number of visitors 828, roundup and auction **814-815,** 828, 829
Poppy fields, wild: Canada **757-759;** Tunisia **208-209**
Population growth, fastest: United States cities 444
Population shifts: United States: Corporations shifting to Sunbelt 457
Portage: Canoe race finish **600-601**
Potala (palace), Lhasa, Tibet **143;** ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259
Potamos, Greece 387
Potatoes and potato growing: Long Island, N. Y. 675-676
Power plant, wood-burning: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Assembly of 688, 694, 704
Cost 694
Fuel data 694, 698, 699, 703, 704, 710
Generating capacity 694, 704
Placement **689,** 690, **691,** 694; Accuracy 690
Size 694
Transport of 688, **690,** 693, 694; Map 688
Prairie: Texas: Development of **472-473**
Prairie, shortgrass 39
Prairie, tallgrass: ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Cultivation of (1800s) 37, 40, 41, 43, 46
Definition 37
Ecosystem 38-39, 45, 51-52; Restoring of *see* Reestablishing, *below*
Forest intrusion 43, 48, 49
Grasses **36,** 39, 42, **45,** 46, 48, **56-57,** 59; Alien species 48, 52; Growth patterns 48, 59, 60
Grazing, effects of 43, 48, 52
Industrial intrusion 52
Map *see* Remnants, *below*
National park, proposed *see* Tallgrass Prairie National Park, *outlined*
Plant introduction 48, 52, 59
Plant species 37, 45, 46, 48, 49, 52, 59; Destruction of, by ranchers 52; *see also* Grasses, *above;* Wild flowers, *below*
Present-day pressures 52
Preserves 37, **38-40,** 41, 42, **44, 45,** 46, 48, **48-49, 58**
Presettlement condition and extent of 38-39, 48; Map 43
Ranches **46** *see also* Flint Hills, Kans.
Reestablishing of 41, 42, 45, 48, 59-61; Time required 42
Remnants **36,** 40, 41, 42, **47, 53-57;** Map 43; *see also* Preserves, *above*
Wild flowers 37, **38-39,** 48, 52, **54,** 59; Presettlement growth 38; Rescuing of 37, 42
Wildlife 42, 51, **60-61;** Birds 41, **54, 55,** 61; Presettlement species 38, 51
Prairie chicken, greater: Courtship display 38, **54,** 55
Prater, Alice "Square-Knot" 817
Prayer wheel: Tibet **248**
Presbyterian church, largest in U. S. 468
Prespa National Park, Greece 375
Price, Reynolds 348
Primates: Laboratory animals, used as: Chemical-exposure tests 179, 182; *see also* Orangutans; Rhesus monkeys
Promethea moth: Mimicry demonstration **406-407**

Protestant Episcopal Cathedral Foundation 555
Protestant Episcopal Church in the United States *see* Episcopal Church
Puberty rites, Apache *see* Sunrise Dance
Pulpwood cultivation: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Acreage 694, 695, 699
Forestry research 699
Opposition 694, 696, 699, 710
Species 695, 696, 698, 699, 701
Tree cutters 698, **705**
Tree planting **692,** 696, 704, 711; New forests **696-697,** 699, 711
Pustejovsky, Dan 156, 157

Q

Quebec (province), Canada: ***Close-up, Canada: Quebec, Newfoundland.*** May supplement; ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623
Quebec City, Canada: ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623
quinceañera celebrations: Mexican Americans 786, **808**
Quintero, Nita 261, 290; ***Coming of Age the Apache Way.*** Feb., 262-271

R

R. J. Reynolds Industries, Inc.: Cigarette production 354, 356; Headquarters 354, **356**
R. J. Reynolds Tobacco Co.: Chemist **357**
Rachid, Abderrazak Ben 205
Raes, Gilbert 747
Ragan, Sam 354
Railroads: China 302, 304, 310, 313; Decline of: Fort Worth, Texas 464, Franklin City, Va. 821; *see also* Trains
Rain forest *see* Tanjung Puting Reserve, Indonesia
Raleigh, Sir Walter 338
Raleigh, N. C. 336, 343, 349; State capitol 337, 349
Rallis, George **386**
"rammed earth" architecture: China 304, 317
Ranchers: Flint Hills, Kans. 40, 42, 46, 48, 50, **50,** oppose national park 37, **40,** 41, 48, 50
Ranches: Kansas 40, 41, 42, 46, 50; Minnesota **46;** Texas 441, **480-481,** 481, 483
Rare wild flowers 37, 42
Rashe, Otis 175, **176**
Ratfish **542**
Rats: Chemical-exposure tests 179, 181
Rattlesnake master (plant) 37
Rattray, Everett **682,** 684
Rattray, Helen **682**
Rausu, Japan: Assistant mayor 79; Fishermen from, arrested by U.S.S.R. 87, 88
Ray, Blaine 343
Rebun (island), Japan: National park 79
Red Guard: China 300, 321, 331
Reed, Tom 819
Reed, Woose (Lloyd) 816, 817
Refugee camps: Displaced persons' camp: Germany, postwar 490; ***Thailand: Refuge from Terror.*** By W. E. Garrett. May, 633-642
Refugees: Estonians: World War II 489-490; ***One Family's Odyssey to America.*** By John Everingham. May, 642-661; ***Thailand: Refuge From Terror.*** By W. E. Garrett. May, 633-642
Reid, Giorgina 666
Reincarnation: Dalai Lamas 227, 244
Religions and religious groups: Balinese religion 419; ***The White Mountain Apache.*** Feb., 260-290; *see also* Buddhism; Christians and Christianity; Hinduism
Religious ceremonies and processions: ***Bali Celebrates a Festival of Faith.*** By Fred and Margaret Eiseman. Mar., 416-427; *see also* Communion
Renaissance cathedral: Turin, Italy **733,** 743
Research Triangle Park, N. C. 337, **345,** 348-349
Research vessels *see Star II*
Resistance groups: World War II: Estonia 489; Greece 368, 391, member of **369**
Resorts: Fort Apache Reservation facilities 277, 278, 279, 280, **282, 283;** *see also* Chincoteague Island, Va.
Rethimnon, Crete: Cafés **392-393**
Return to Estonia. By Priit J. Vesilind. Apr., 485-511
Revival meeting: Charlotte, N. C. **351**
Reyes, San Juana de los, and grandson **461**
Reynolds, R. J. 354
Reyntiens, Patrick 568
Rhesus monkeys: Chemical-exposure tests, used in 182; ***Temple Monkeys of Nepal.*** By Jane Teas. Apr., 575-584
Aggression 577; Display **582-583**
Birth 582, 584; Birthrate 579
Death, causes of 582
Diet 576, 577
Dominance 578
Grooming **583;** Purpose 583
Infant mortality 579, 582, 584
Mating season 577
Troops 577
Rhododendron: Roan Mountain, N. C. 343
Rice growing: Airplane seeding 460, 694, 705; Amazon floodplain 694, 695, 705, **710-711;** Planting: Hokkaido (island), Japan **66-67;** Texas 460, **465**
Richie, Tom 577, 578
Riegel, Jeffery 299, 300, **307,** 318-319
Riggi, Giovanni **741,** 750
Riley, Nathaniel **283**
Rinaldi, Peter 749
Rincon-Vitova Insectaries, Ventura, Calif. 164
Rinker, C. J. **341**
Rishiri (island), Japan: National park 79; Storm 79
Ritsos, Yannis 393
River formation: Faulting and 619
Riverhead, N. Y.: Duck hatchery 676, 678
Roan Mountain, N. C. 343
Roanoke Island, N. C.: Lost Colony 338
Rock art: Paintings of Buddhist deities **255;** ***Utah's Rock Art: Wilderness Louvre.*** By Gary Smith, with Michael E. Long. Jan., 97-117
Air pollution and 101
Authenticity dispute 115
Cultures, span of: Diagram **105;** *see also* Anasazi; Archaic Period; Barrier Canyon; *and* Ute Indians
Dating 97, 105, 112, 115; Diagram **105**
Defacement of 101, **101,** 112, **112**
Figures **104, 113**
Map of sites 101
Three-dimensional **102**
Rock crabs, red **548**
Rockfish **70-71**
Rocky Mountains, Canada-U. S.: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779
Rodents: Laboratory animals, used as: Chemical-exposure tests 179, 181
Rodeos: Analysis of 446; Rodeo cowboys 446-447; Texas 447, Texas Prison Rodeo, annual **448-449**
Rodriguez, Edmundo 791, 792, 794
Rogers, Ray **750,** 751
Roman Catholic Church: Archbishops: New Mexico **794,** Turin **732,** 749; Mexican Americans 781, 791, 792, 794; Relics *see* Shroud of Turin
Roman Empire: Crucifixions 737, 747; Tunisia 184, 192, 193, 199, 201, coliseum **186-187,** 197, 198, mosaics 197, **198, 199,** ruins 188, 199, 201, water-system legacy 184, 193
Roman mythology 20-21
Roosevelt, Theodore 555, 564
Roosevelt family (Apache) 273, 275, **280-281**
Rosas, Silvia **798**
Rose, Monte 766
Rose windows *see* Washington Cathedral: Windows

Rosen, Jan Henrik de 571
Ross, Tom 760
Roundup, horse: Assateague Island, Va. **814-815,** 828, 829
Roundups, cattle: Fort Apache Reservation, Ariz. **272-274;** Texas 481, 483
Rousanou Monastery, Meteora, Greece **363-364**
Rovere, Giovanni Battista della: Painting by **732**
Royster, Vermont Connecticut 348
Ruark, Robert 348
Rundle, Mount, Canada **770-771**
Rural–urban migration: Greece 372, 374, 380
Russia: Estonia, ruled (1721-1918) 485, 491, 494-495, 502
Russians: Estonians and 502; Russians in Estonia (immigrants, tourists, shoppers) 493, 494, 496, **499, 502-503,** 507
Russo–Japanese border disputes: Kuril Islands 65, 67, 75, 87-88, 90
Ruzihan (Uygur) 325

S

Sa Kaeo (refugee camp), Thailand: Cambodian refugees **636,** 639, 641
Sag Harbor, N. Y. 671, 683; Boutique **672-673;** Whaling fleet 683
Saguenay River, Canada: Confluence with St. Lawrence River 614; Ferry 614; Whales 616
Sahel (Sub Sahara), Africa: ***Oursi, Magnet in the Desert.*** By Carole E. Devillers. Apr., 512-525
Sailboats: Dinghies **491;** Long Island Sound **668**
Saint Alban, Mount, Washington, D. C. **554-555,** 555, 562, **564-565, 572**
Saint Alban's Church, Washington, D. C.: Ministry 562
Saint Albans School, Washington, D. C. 562, 573
St. Irénée, Canada: Carnival: Woodsmen contest **618-619**
St.-Jean-Port-Joli, Canada: Woodcarving center 623, Cloutier sculpture **617**
St. Lawrence, Gulf of, Canada **588-589,** 594
St. Lawrence River, Canada-U. S.: ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623
Age 619
Bridges 610, 614
Course 595; Stability 619
Ferries 614, 623
Formation of 619
History 586, 613, 614
Icebreakers 595, 606, 610, 620
Length 594, 595
Map 594-595
Pollution 613, 620
Shipping **587, 592-593, 595,** 604, **612-613,** 616, 618-619 *see also* St. Lawrence Seaway, *outlined*
Shipwrecks 606, 610
Tributaries **611,** 614
Whales 616; Overhunting 616
Winter navigation 595, 620
St. Lawrence Seaway, Canada-U. S.: ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623
Administration 601; Lock maintenance 601
Dedication ceremony 604
Historic sites flooded by: Preservation 614
Navigation season, goal for 604
Shipping 601, 604
Vessel size, maximum 604
Winter operations, proposed 595, 604; Opposition 595, 604
St. Olav's (Oleviste) Church, Tallinn, Estonia 491, 493
St. Timothy Catholic Church, San Antonio, Texas 780-781
Saito, Hideo, family 62, 65
Salamanders: Newt **130,** 131
Salmon: Canada 619; Japan **70,** fry-release festival 76, 78, **90**
Salmonella typhimurium: Carcinogen testing 179
Salt marshes, East Coast, U. S. 810, 811, **813,** 820, **822-823,** 829
Salvaging, shipwreck (18th-century): Assateague Island, Md.-Va., region 812
Samphan, Khieu 633
San Antonio, Texas 450; Churches 450, 780-781, 791-792; History 450, the Alamo, siege of 445 map note, 450, 451; Mexican Americans **780-781,** 791-792, 794, 796; Public service organization 794
San Diego, Calif. 798; Mexican Americans 806, **808;** Park **782-783**
San Giovanni Battista, Cathedral of, Turin, Italy **733;** Celebration of Mass **732-733;** Shroud of Turin displayed **732-733,** 743
San Jacinto, Battle of 444, 454; Casualties 454
San Joaquin Valley, Calif.: Crops 145
San Jose, Calif.: Mexican-American community **804-805**
San Ysidro, Calif.: Mexican immigrants, illegal 478
Sanchez, Antonio 781, **784**
Sanchez, Frank 806
Sand dunes: Stabilization of: Tengger Desert, China **308-309,** 310
Sand Hills, Nebr.: Prairie remnants 43
Sandhills (region), N. C. 337, 354
Sandstone: Rock art **100, 101**
Sanford, Terry 349
Santa Ana, Calif.: Folk healer **795**
Santa Anna, Antonio López de: Texas revolution 451, 454
Saponaria: Cloth making, ancient 750, 751-752
Sapporo, Japan 71, 90, 91; Industry 81; Pleasure district 91; Winter Olympic Games (1972) 71
Sapporo Agricultural College, Japan: Founder 90
Sarabia, Andy 794
Sassi, Mahbouba **216**
Satterlee, Henry Yates 555, 562
Saturn (planet); Diameter 13; Rings 12; Voyager flybys 13, 28
Savoy, Dukes of: Shroud of Turin, owners of 734, 749
Savoy, House of: Royal Palace: Shroud of Turin research **735,** 749-750
Sawagami, Hiroshi 88, 90
Sayre, Francis B., Jr. 563, **564,** 566; Quoted 552
Scalloping: Georges Bank 679
Scallops **535, 547;** Peconic Bay, N. Y. 676
Scandinavian immigrants: Prairie settlement 46
Scarborough, William 341
Scarification: Jelgobe Fulani **513**
Schaafsma, Polly 97, 103, 105, 112
Schenck, Bob **659**
Schistosomiasis (bilharziasis) 514
School, mobile: Migrant farmworker families **797**
Schoolhouse, one-room **47**
Science Seeks to Solve...The Mystery of the Shroud. By Kenneth F. Weaver. June 730-753
Scott, Esther Mae "Mother" 571, **571**
Sculpture: Washington Cathedral 559, 560, 561, **561,** 566, **566-567,** 573; Wood sculpture: "La Dame Blanche" (Cloutier) **617**
Sea anemones **541, 544-545, 548,** *cover; Metridium senile* **529;** *Stomphia didemon* **547;** Strawberry anemones **530-531**
Sea horse, dwarf: Camouflage **408**
Sea pens 540, **540**
Sea stars 546; Leather star **546-547;** Orange sea star **550;** Purple sea stars **550-551;** Sunflower stars 546, **546, 547**
Sea urchins 536; Crimson **526-528;** Spiny **537**
Seafood: Long Island 666, 676, 679; *see also* Chincoteague Island, Va.
Seaway International Bridge, Canada-U. S.: Indian tollgate 610
Seed gleaning: Volunteer conservationists 37, 45, 59
Seeking the Best of Two Worlds (Apache). By Bill Hess. Feb., 272-290
Seikan Undersea Tunnel, Japan 65, 88, 91
Selat, Bali, Indonesia: Villagers **416-417**
Serengeti National Park, Tanzania: ***Cheetahs: In a Race for Survival.*** By George W. and Lory Herbison Frame. May, 712-728
Serengeti Research Institute: Cheetah study support 716
Serfdom: Tibet (pre-1959) 240,

245, 250, 251, 254, 259
Seveso, Italy: TCDD accident 182
Shadoff, Lewis 182
Shapiro, Gary **83**, **839**, 845, 846, 849
Shapotou, China: Railroad 310
Shark hunting: White-shark sweepstakes 666
Sharks: Long Island waters 666; Mako sharks 666; White sharks 666, record catch 666
She Yukan, Laurence **330**, 331
Sheep: Berber herds 11, 120, **120-121**, 127; Greece 374
Sheep, wild *see* Bighorns
Shellfish: ***British Columbia's Cold Emerald Sea.*** By David Doubilet. Apr., 526-551; Sign warning against consumption **620**; *see also* Clams; Oysters
Shelter Island, N. Y. 664, 682-683
Shi Kunlan 310
Shiga, Kenji 79
Shipping tycoons: Greece 385, **385**, 387, 391
Ships; shipping: Merchant ships, Greek 377, 385, 387, 391; Ocean liners, historic 1; ***The St. Lawrence River: Canada's Highway to the Sea.*** By William S. Ellis. May, 586-623; Wooden cargo vessels 616, 618
Shipwrecks: Assateague horses and 822, 828; Outer Banks, N. C. 341; St. Lawrence River 606, 610; Salvaging, former: Chincoteaguers 812, Outer Banks 341
Shiretoko (peninsula), Japan: Storm 79
Shiretoko National Park, Japan 79, 86
Shoes, burial: Celtic tomb 430, **435**, 438
Shrestha, Rakesh 577, 584
Shrestha, Ram 577
Shrimp: Clown shrimp **544**; Grass shrimp **408-409**
Shroud of Turin: ***The Mystery of the Shroud.*** By Kenneth F. Weaver. June, 730-753
Backing **741**, 750, 752
"Blood" stains 735, **736**, 737, 743, **744-746**, 752; Fluorescence tests 744, 746, 750, 752; Key locating **737-738**; Penetration 735, **736**, 741, 752
Density scan 731, 748; Cardboard model **730-731**
Displays, public **732-733**, 733, 734, 743; First recorded 732, 734
Fluorescence tests 744-746, **744-746**, 750, 752
Foldout **737-740**; Key **737-738**
History 732, 734, 743, 747, 752; Fire (pre-1532) 740, damage **742**; Fire (1532) 734, 740, 743, 745, 751, damage **737-740**, **744-746**
Image 730, **737-740**, 743, 747; Anatomically correct 734, 746, 747; Height 748; Markings 734, 737, 743, 744, 745, 746 *see also* Scourge marks, *below*; Positive-image negative 743, 752, **753**
Investigators **735**, **736**, **741-742**, 743, 747-749, **748-750**, 751, 752
Photographs **732-733**, **737-740**, 747, 750; First 743, 752; Ultraviolet **744-746**, 750, 752
Photomicrographs 741, **742**, 750, 751
Pollen analysis 747, 750; Collecting 747, 750, **750**
Scourge marks 734, 737, 740, 743, 744, **744-746**, 746; Key locating **737-738**
Size 738, 740
Theories: Crucifixion theory 731, 732, 734, 737; Scorch theory 741, 745, 751, 752; Vapor theory 741, 743, 751
Weave 740, 747
Shroud of Turin Research Project: Founding 749; Members 751
Sidi Mohammed el Merheni 121; Tomb **121**
Sign language: Orangutan communication **838**, **839**, 845, 846, 849
Signing, clam 816, 818
Silk: Ancient China 313, 317
Silk Road: Desert crossings 305; Outposts 311, **314-315**, 315, 317, ruins of **320-321**; Route 313, 317, map locating 299
Silvex (herbicide) 178; Poisonous by-product of 178, 181; Use suspended 178
Simon Fraser (icebreaker) 606, 610
Simpson, Ann 775
Simpson, Jim 774, 775, 778
Sindonology *see* Shroud of Turin
Singapudu, Bali: Artwork: Cookie *sarad* **424**
Sisson, Robert F.: ***Deception: Formula for Survival.*** Mar., 394-415
Sitton, Claude 349
Ski resort: Fort Apache Reservation, Ariz. 277, 278, 280, patrol member **283**
Skiers and skiing: Canada 763, 769, 771, **777**, gondola-lift construction **773**, ski patrol **771**, summer training **774**; Hokkaido (island), Japan **76-77**, 78, class **86-87**
Skjonsberg, Terry 766
Sklavounos, Loukas, family **372-373**
Skull: Tibetan rituals **224**, 225
Slave states: United States 52
Sling (weapon) Feb. *cover*
Smith, Bradford A. 11, 18, **18**, 21, 23
Smith, Fannie Johnson **864**
Smith, Gary: ***Utah's Rock Art: Wilderness Louvre.*** Jan., 97-117
Smith, Griffin, Jr.: ***The Mexican Americans: A People on the Move.*** June, 780-809
Smith, Nathaniel 821, 829
Snow, Jane: ***Long Island's Quiet Side.*** May, 662-685
Snow, Julie **673**
Snow geese, greater: Migration stopover: Canada 594, 623; Wintering grounds 829
Soapwort: Cloth making, ancient 750, 751-752
Socialists: Greece 382, leader 382, **387**, 392
Sodbusters (1800's) 37, 40, 41, 46, 50
Soderblom, Laurence A. **18**, 21, 28
Sokoloff, Martin 354
Solar collectors: Fort Apache Reservation, Ariz. **279**
Solar system **12-13**; Age 12; Highest temperature in 20; Mass distribution 12; Meteor bombardment 21
Solar wind: Jupiter's magnetosphere and 10, 17, 20, diagram **10**
Soledad, Calif.: Farm worker family **793**, 796-797
Solis, Dolores 792
Sonam Wangdui 249, 250
Songhai (people): Oursi, Upper Volta 514, 516, 518, 525
Songtsan Gambo, King (Tibet) 259
Soran, Diane 751, 752
Soriano, Pedro, and family **780-781**
Sotelo, Frances 163, 166
Sousa, María Socorro Pírez de **709**
South Dakota: Glacial deposits 42; Grasshopper infestation 161; Prairie preserve **40**, 42, **60-61**
Southampton, N. Y. 665, 668, 674; Beach house **684-685**; Main Street **682-683**; Residential street **674-675**
Southeast Asia: ***Thailand: Refuge From Terror.*** By W. E. Garrett. May, 633-642
Southern Furniture Market Center, High Point, N. C.: Spring Mart 352
Southern Pines, N. C. 354
Southwest, U. S.: ***The Mexican Americans: A People on the Move.*** By Griffin Smith, Jr. June, 780-809
Southwick, Charles H. 577
Sox, David 734
Space flights and research: ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Spacecraft *see* Voyager spacecraft
Spain: Colonization: Mexico (1519-1821) 444, 450; Texas (1519-1821) 444
Spann, Claude, Jr. **856**
Spas: Estonia **508-509**, 509
Spider, crab: Camouflage **396-397**
Spiny sea urchins **537**
Spirits: Apache religion 263, 269, 275, 277, 278, 290
Sportfishing: Fort Apache Reservation, Ariz. 277, 279, **282**; Hokkaido (island), Japan 79, **93**; Long Island, N. Y. 666, 683-684, shark fishing 666; North Carolina **341**
Sri Lanka: Malaria, reduction in

151
Stago, Phillip, Jr. 279
Stained glass: ***Washington Cathedral: "House of Prayer for All People."*** By Robert Paul Jordan. Apr., 552-573
Star II (submarine): Jim (diving suit) test 624, **625-628,** 628
Starfish *see* Sea stars
State farms: China 326-327, Tibet **230, 231,** 233, 248-249, 250, 251, militia **232-234,** road building **228-229,** 254, workers 327; Estonia 499, 500
Steam locomotives: China 302, **302-303**
Steenmeijer, Han 705
Sternburg, James 404, 406-407
Stereometric photography: Shroud of Turin research **748**
Stevens, Carrie 334-335
Stevens, Edgar 336
Stock-car racing: North Carolina 352
Stone, Edward Durell 349
Stone carvings: Washington Cathedral 560, 561, **561,** 566
Stoner, Jean **767**
Storstad (collier): Wreck 606
Su Yuguo 305, 310
Submarine, research *see Star II*
Suci, Bali: Artwork: Dough-art *sarad* **425**
Suffolk County, N. Y.: Farmlands Preservation Program 676; Proposed secession 669, 684
Sugarloaf (ice mound) **611**
Sun bear, Malayan: Cub **847**
Sunbelt *see* Texas
Sunfish **132**
Sunrise Dance (puberty rites) 289-290; ***Coming of Age the Apache Way.*** By Nita Quintero. Feb., 262-271
Sunshine Village, Canada 771; Gondola-lift construction **773**
Sunwapta Falls, Canada **761**
Sunwapta River, Canada **761**
Swansea, Charleen **338-339**
Swayambhu temple, Kathmandu Valley, Nepal: Rhesus monkeys **574,** 575, **576,** 577, 578, **580-581**
Sweden: Estonia, rule of 491, 494, 507
Swedish immigrants: Minnesota (1870s) 46
Sweetman, Jimmy 666
Sword Mountain, Japan 65
Symbolism: Colors: Muslim dress 379; ***Coming of Age the Apache Way.*** By Nita Quintero. Feb., 262-271; Primitive art 108-109, 111

T

TCDD (poison) 178, 181, 182; Crystals **180, 181;** Toxicity 178, 181, 182
Taazayet, Chaabane Ben 210
Tadoussac, Canada 614, 616
Tadpoles 131, **132, 133;** Metamorphosis 132-133
Takedatsu, Minoru 75-76
Taklimakan Desert, China: Dune fields 298, 305; Name meaning 305; Oasis 313
Takrouna, Tunisia 217; Aerial view **190-191;** World War II 191
The Tallgrass Prairie: Can It Be Saved? By Dennis Farney. Jan., 37-61
Tallgrass Prairie National Park, proposed: ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Concessions to ranchers 43, 51
Gas and oil production to continue 51
Map *see* Sites, *below*
Opposition to 37, **40,** 41, 48, 50, 51, 52
Proponents of 50-52, **51**
Sites, proposed 37, 39, 40; Map 43
Size 39, 51
Tallinn, Estonia: Legend 491; Market, private-plot produce **497;** Name origin 491; Notable buildings **486-487,** 491, 493, **505, 510-511,** medieval architecture 486, 491, 493; Olympic Games (1980) 491, construction for 493-494; Tourists 494, accommodations; entertainment 494, **498-499, 506-507,** number of (1979) 494
Tallinn, Bay of, Estonia: Olympic Games (1980): Sailing-race site 491, **491**
Talmage, John 676
Talmage, Nat 675-676
Tanjung Puting Reserve, Indonesia: ***Living With the Great Orange Apes: Indonesia's Orangutans.*** By Biruté M. F. Galdikas. June, 830-853
Tannehill family: Neshoba County Fair, Miss. **855**
Tanzania *see* Serengeti National Park
Tartu, Estonia 507
Tartu State University, Estonia 507
Taylor, Henry 577, 582
Teamsters Union: Farm workers 796
Teas, Jane: ***Temple Monkeys of Nepal.*** Apr., 575-584
Technology: Electronics industry 445 map note, 474, 476, 477
Tejeda, Oscar 800, 801
Television series, NGS (1980 programs) 1, "Dive to the Edge of Creation" (January), "The Invisible World" (March), "Mysteries of the Mind" (February), "The Superliners" (April)
Tellico Dam, Little Tennessee River, Tenn. 345
Temple Monkeys of Nepal. By Jane Teas. Apr., 575-584
Temples: Greece: Present-day cult **376-377,** ruins **366-367,** 373, **377;** ***Temple Monkeys of Nepal.*** By Jane Teas. Apr., 575-584; *see also* Besakih temple compound
Ten Commandments Mountain, N. C. **350-351**
Tengger Desert, China: Dune stabilization **308-309,** 310
Tents: Kazak yurts: China **324-325,** 330
Terlingua, Texas: Chili cook-off **463**
Teutonic Knights: Estonia, invasion of 491, 494
Texas:
Cotton farming 156-157
The Mexican Americans: A People on the Move. By Griffin Smith, Jr. June, 780-809
Texas! By Howard La Fay. Apr., 440-483
Agriculture 444, 445, 460, 464, 474; Crop-distribution map 444-445; *see also* Cattle raising, *below*
Area 444
Breadth 440
Cattle raising 445, 470, 481, 483; Feedlot industry **442-443,** 445, 470
Cities, major 444 *see also by name*
Colleges and universities 446, 474
Commerce and industry 444, 453, 457, 458, 464 *see also* Agriculture, *above;* Electronics industry, Oil production, *below*
Cuisine 461, **463,** 470, 476, 483; State Dish 463
Economy 444 *see also* Commerce and industry, *above*
Electronics industry 445, 474, 476, 477
Flag **444**
History 444, 445, 450-451, 454, 457
Map 444-445
Oil production 444, 460, 474
The people: Dress, Texan **456-457,** 476-477; Hispanics 461, 480-481, illegal aliens 477, 478, 480; Ostentatious 444, 446, 470, 474, **482, 483;** Speech 444, 446, 477, 483; *see also* Population, *below*
Population 444; Hispanics 461, 480; Rank 444; Rural-urban percentages 444, 458
Racism 481
Seasons 446, 483
Settlers 444, 450, 468
Size, comparative 440, 444
Superlatives 444, 445, 457, 464, 473, 474
Taxation: Corporations untaxed 456
Unemployment and poverty rate 456
Texas A & M University: Fire ant control research **171;** Football parade **446;** Integrated Pest Management program 157
Texas Hatters (hat shop), Austin,

Texas **462,** 477
Texas Instruments (TI) 474; International trade 474, Estonian collective farm 496; Microelectronics 474, 476, **477;** Work ethic 474
Texas longhorns (cattle) 46
Texas Medical Center, Houston, Texas 457, 460; Cancer center 460, **476**
Texas Prison Rodeo, annual **448-449**
Texas Tech, Lubbock, Texas 474
Texians (1836): Texas revolution 450-451, 454
Textile industry: North Carolina 336, 349, 352, 354
Textiles, ancient: Iron Age 429, 435, 438; Shroud of Turin 740, 747-748, 751-752, weave patterns **742**
Thailand *see* Refugee camps
Théorêt, Marc 610
Thermal waters: Hokkaido (island), Japan **77,** 79, 91, **92-93**
Thessaloniki, Greece 375, 379, **384**
Thessaly (region), Greece **362-364;** Wheat field **378**
Thierer, Mrs. Lowell **41**
Thompson, Nick 285
Thompson, Ray **285,** 287
Thoron, B. W. **564**
Thousand Islands, Canada–U. S. 595, **595,** 614; Islands, number of 614; Vacation cottage **592**
Tian Bao 221
Tian Shan (Celestial Mountains), China 323, **324-325,** 327
Tibet: ***In Long-Forbidden Tibet.*** By Fred Ward. Feb., 218-259
Buddhism 225, 228, 231, 238, 242; Deities 231, **244-247, 251, 255;** Monks 228, 231, 238, 242, **242,** 243, 251, 254; Ritual objects **224-225, 248, 250;** *see also* Dalai Lama, *outlined*
Capital *see* Lhasa
Chinese control 219, 221, 223, 225, 226-227, 228, 231, 238, 240, 242, 244, 248, 259
Diet 231, 245, 248
Education 226, 259
Electricity 226, 259
Farms and farming **228-231,** 231, 240, 244-245, 248-249, 250, **256-257**
Government 221, 223, 227, 231 *see also* Chinese control, *above*
Health care **252,** 253, **253**
History 221, 226, 227, 231, 238, 240, 246, 251, 254, 259; Revolt (1959) 221, 225, 228, 238; Social structure (pre-1959) 251; *see also* Chinese control, *above*
Isolation 221, 240, 259; Diminishing 219
Map 221
Modernization 221, 240, 250-251, 259
Population 240
Religion, restrictions on 231, 238, 242
Roads 221, 249, 259; Building of **228-229,** 254
Tiger swallowtail (butterfly): Coloration **404-405,** 407; Larvae **402, 403;** Pupa **403**
The "Tilers" (artists' group): Long Island, N. Y. 668
Timber industry: Herbicide use 178
Timber losses: Gypsy moth caterpillar infestation 148
Titma, Mikk 498
Tobacco budworm **168;** Fire ants, attack by **171;** Pesticide resistance 151, **154-155**
Tobacco growing: North Carolina, 336, 346, 354, crop value 356
Tobacco industry: North Carolina 336, 337, 349, 352, 354, 356, chemist **357,** warehouse **356**
Tokachi Plain, Japan 65
Tokoro, Japan **64**
Tombs: Beehive tomb **121;** ***Treasure From a Celtic Tomb.*** By Jörg Biel. Mar., 428-438
Tools, Iron Age slaughtering: Celtic tomb **431,** 438
Torres, Esteban 808
Torres, Jesse **799**
Towers: Bamboo towers: Indonesia **421;** Mani (district), Greece 368, 372; Reunion Tower, Dallas, Texas **459**
Toxaphene: Cotton-pest control 157; Hazards 157
Toyako Onsen, Japan 91
Toyohira River, Japan: Salmon-fry release 78, **90**
Trade fair: Berbers 119, 120-121
Trail of Tears: Cherokee Indians 336 map note, 345
Trains: China 301, 302, **302-303,** 305; Freight train, open-car: Sulfur transport **772**
Trans-Canada Highway: Banff National Park 760, 766-767, **774-775;** Wildlife on **764,** 766
Trapping: Duck trapping 819, **827;** Research specimens 819
Travis, William B. 451
Treasure From a Celtic Tomb. By Jörg Biel. Mar., 428-438
Tree farming: ***Jari: A Billion-dollar Gamble.*** By Loren McIntyre. May, 686-711
Tree frog **141**
Trescot, Jack 694
Trois-Rivières (city), Canada: Canoe race: Portage competition **600-601;** Paper mills 618-619
Truckses, Helmut 436
Tsatsos, Constantine 386
Tsugaru Strait, Japan: Tunnel under 65, 88, 91
Tuareg: Oursi, Upper Volta 514, 522
Tucson, Ariz.: Mexican Americans 786, **803**
Tudeng Danda 238
Tugs, seagoing **688, 690,** 694
Tunis, Lake of, Tunisia **202-203**
Tunis, Tunisia 191-192, **202-203;** Aerial view **195;** Hotels **188-189, 196-197;** Museum **198,** mosaic **198-199;** Old section 201, 205; Population 193
Tunisia: Sea, Sand, Success. By Mike Edwards. Feb., 184-217
Dress, traditional 205, 206, **210-212, 216**
Education 192, 197, 201, 206, 207; School **200**
Facts and figures 193
Flag **193**
Government and politics: One-party system 206, 207
History: French protectorate 201, independence from France 191, 193, 206; Phoenician occupation 184, 192, 193, 201; Roman occupation 192, 193, 199, 201, coliseum **186-187,** 197, 198, mosaics 197, **198, 199,** ruins 188, 199, 201, water supply 184, 193; Turkish occupation 205; World War II 184, 191
Housing 191; Apartment construction **196-197,** Underground **212-213**
Income, per capita 197
Indigenous peoples *see* Berbers
Islam 188, 191, 193; Muslim festival **210-211**
Nomadism 192, 217
Oil: Prospecting 213, **214-215,** 217; Scarcity of 184, 191
Population 188, 193
Tourism 191, 197, 204, 209; Jobs provided by 210
Unemployment rate 192
Wedding customs 188
Women's role changing 188, 192, 201, 206
Tunnel, world's longest 65, 91
Turin, Italy: ***The Mystery of the Shroud.*** By Kenneth F. Weaver. June, 730-753
Turkish–Greek conflicts 368, 371, 374, 375, 379, 382, 386-387, 393
Turner, George 577
Turpan Depression (region), China: ***Journey to China's Far West.*** By Rick Gore. Mar., 292-331
Climate 322, 325, 326
Elevation 318
Grape growing 318, 323, 325, 326
History 323
Irrigation 323, 325
Muslims 326
Ruined city **320-321**
Village 324-326
Turtle grass **408-409**
Turtles: Green sea **451;** Snapping turtles 131, 134, **136-137**
2,4,5-T (herbicide) 178; Manufacturing plants 178, **181,** 182; Poisonous by-product 178, 181; Use suspended 178, 182

U

Ulysses (Greek hero): Mosaic of

198-199
Umberto II, King (Italy) 749
Underground homes: Tunisia **212-213**
Underwater exploration: ***Unexpected Glory in Canada's Cold Seas.*** By David Doubilet. Apr., 526-551; ***A Walk in the Deep.*** By Sylvia A. Earle. May, 624-631
Union of Soviet Socialist Republics: Estonia, annexation of (1940) 485, 489-490, 496, 500; German invasion of (1940) 489; Japanese territories, occupation of 75, 87, 90; National park, first 503; Republics, number of 485, 496; Territorial waters claimed 75, 87, fishing quotas 71, Japanese fishermen arrested in 75, 87-88, 90, map 65
United Farm Workers **788-789,** 796; Strike 788, 796
United Nations: Refugee aid 639
United States: Aliens, illegal: Mexicans 477, 478, 480, 786, **790,** 791, 797-798, 800-801; Canada and 585; Greek civil war and 374; ***The Mexican Americans: A People on the Move.*** By Griffin Smith, Jr. June, 780-809; Mexico and 585; ***The Pesticide Dilemma.*** By Allen A. Boraiko. Feb., 145-183; Refugees *see* Hmong; Turkey, aid to, resumed 393; Two-hundred-mile limit 679; Westward Movement 450
U. S. Air Force: Stained-glass window honoring **568**
U. S. Army: Apache Indians and (1869-70) 278
U. S. Border Patrol: Mexican border 477, 791, 800-801
U. S. Capitol: Cornerstone, setting of 552, 555, 564
U. S. Congress: Mexican-American members 785; Washington Cathedral charter 552, 555, 562
U. S. Department of Agriculture: Pest-eradication programs 151, 157, 160, 161
U. S. Department of Transportation: Saint Lawrence Seaway Development Corporation 604
U. S. Immigration and Naturalization Service: Deportation of illegal aliens 797
U. S. Supreme Court: Duke tobacco monopoly dissolved 354; First busing case 352; Tellico Dam decision 345
University of California at Riverside: Pesticide-resistance research 154-155
University of Chicago: Atom, photographing of 1
University of Georgia: Pesticide application-methods research **152,** 153, **153**
University of Illinois: Prairie preserve **44, 45**
University of Kentucky: Cucumber disease-resistance studies **167**
University of North Carolina 337, 345, 348; Chapel Hill campus 345, 352; Cheerleaders **353;** Medical school 348; President 345
Upper Canada Village (museum town), Canada: Printer's shop window **615**
Upper Volta *see* Oursi
Uranus (planet): Diameter 13; Rings 12; Voyager flyby, possible 12, 28
Urbon, Benno **437**
Urümqi, China: Industry 321-322; Islam 326; Population 322
Usu, Mount (volcano), Japan 91-92; Eruptions (1977-1978) 91, fatalities 91
Utah: ***Utah's Rock Art: Wilderness Louvre.*** By Gary Smith, with Michael E. Long. Jan., 97-117
Ute Indians: Rock art **97, 116-117**
Uygur people: China **292-294,** 305, **316, 319,** 321-322, 325-326

V

VP-8 Image Analyzer: Shroud of Turin research 748
Valk, Heinrich 500-501, **504;** Cartoon by **504**
Valley of the Ten Peaks, Canada **776**
Vance, Cyrus **570**
Vandalism: Rock art defacing **101**
Vanguard Commune, Tibet 245, 248, **256-257**
Van Horne, William Cornelius 763
Vathia, Greece: Restored 372-373
Vaughan, Henry 555
Vegetables: Pesticide residue 175, 177
Velarde, Al 477, 480
Vermilion Lakes, Canada: Wildlife 766, 767
Vesilind, Aino 489, **492**
Vesilind, Andres **493**
Vesilind, Friida 490, 493
Vesilind, Paul Edward 485, 489, 490, **492**
Vesilind, Priit J. 439, **493;** ***Return to Estonia.*** Apr., 485-511
Vesilind family: Estonia: Prewar 485, 489, 490, **492,** 493, family home **492,** 493; Remaining male member **493**
Vézina, Jacques Salem 606, 610
Vietnam: Chinese invasion of (1979) 634; History 635; Invasion of Kampuchea 634, 635, 642; Invasion of Laos 634, 635, 642; Reeducation camps 633; U. S. withdrawal 633, 635
Vietnamese refugees 634, 642
Vignon, Paul Joseph 743
Vilde, Eduard 509
Viljandi, Estonia 509; Teenagers **488-489**
Vinegar fly **414-415**
Vinson, S. Bradleigh 161
Virginia *see* Chincoteague Island
Visalia, Calif.: Beeyards 168, **173**
Visit to Forbidden Tibet. By Fred Ward. Feb., 218-259
Volcanoes: Hokkaido (island), Japan 78, 91-92; Indonesia 416, 419; ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Volos, Greece: Port **385**
Võru, Estonia: Guesthouse 509
Voyager spacecraft: ***What Voyager Saw: Jupiter's Dazzling Realm.*** By Rick Gore. Jan., 2-29
Diagrams **12, 13**
Flybys 12-13, 21-23, 28
Launches 13
Trajectories: Diagrams **12-13**
Weight 11

W

Wagner, Lawrence 50-52, **51**
Wagner, Ray 51, **51,** 52
Wagon, iron-plated: Celtic tomb 430, **431,** 438, wheel **437**
Wake Forest University, N. C. 348, 354
Waldbauer, Gilbert 406-407
Waldemar II, King (Denmark): Estonian castle 491, **505**
A Walk in the Deep. By Sylvia A. Earle. May, 624-631
Walker, John T. **563, 564,** 573
Walker, Leon **275**
Wang Xinhua 327
Wangdui Zhaba 221, 226, 240
Ward, Fred 143, **143;** ***In Long-Forbidden Tibet.*** Feb., 218-259; photographer: ***The Pesticide Dilemma.*** Feb., 145-183
Washington, George: Capitol cornerstone set by 552, 555, 564
Washington Cathedral: "House of Prayer for All People." By Robert Paul Jordan. Apr., 552-573
Apse **557,** 560, 562, 564
Architects 555 *see also* Frohman, Philip Hubert
Architecture, Gothic 555, **556-558,** 559, 561
Artisans 559, 562, **564,** 566, **567,** 568, **568,** 571
Bishops 555, 562 *see also* Creighton, William F.; Satterlee, Henry Yates; Walker, John T.
Building committee: Chairman 561; Members 563, **564**
Cathedra 562
Chapels 560, 563, 564, 566, **570-571;** Number of 559; Open 24 hours 573; Stained-glass window **568**
Clergy **558,** 573; Visiting 553, 562; *see also* Bishops, *above;* Dean Emeritus, *below*
Clerk of the Works *see* Feller, Richard T.
Congressional charter (1893) 552, 555, 562

Construction 552, 555, 559, 562, 563; Foundation stone laid (1907) 552, 555, 562, **565;** Halfway point (1952) **564;** Interruptions 562, 564; Stage of completion (1980) 555
Cutaway painting **559-560**
Dean Emeritus *see* Sayre, Francis B., Jr.
Ecumenical outreach 552, 559, 562, 566, 571, **570-571**
Education, promotion of 561, 562, 573; Schools *see* Beauvoir School; College of Preachers; National Cathedral School; St. Albans School
Funding 555, 573
Grounds **554-555,** 562, **564-565, 572;** Acreage 562
Library, Rare Book: King James Bible 559, 566
Ministry 552, 555, 559, 561
Names 552, 554, 555, 562
Nave **556-558, 560,** 562; Dedication (1976) **564;** Stone carving 566
Provost *see* Perry, Charles A.
Pulpits **553, 558, 560, 570**
Sculpture 559, 560, 561, **561,** 566, **566-567,** 573
Size 552, 555, 560, 561
Staff 571 *see also* Visitor services, *below*
Tombs 562, 563, 565
Towers **554,** 555, **559, 560, 572;** Stone setting (1961) **564**
Transepts 560
Visitor services 561; Visitors 561, 562
Volunteers 573; Number of 562
Windows: Commemorative windows: Abraham Window **568, 569,** Space Window 563, 566, **568;** Rose Windows **553,** 565
Worshipers **553, 558,** 559, **563, 564-565;** Number of 561, 563
Wasps: *Aphytis melinis* 164; Model and mimics 412, **412, 413;** *Trichogramma* **164, 165;** *Vespula maculifrons* **412**
Water birds: Chincoteague National Wildlife Refuge 812, **824-825,** 828, 829; Cranes, tancho 76; Flamingos **202-203;** Gull, laughing **824;** Herons: Cattle egret **828,** great blue herons **824-825,** great egrets **824-825,** little blue heron **450;** Oursi, Upper Volta 517, 518, 520
Water buffalo: Jari Florestal e Agropecuária Ltda., Brazil 695, 705
"Water Garden," Fort Worth, Texas **454-455**
Water lilies: As food: Oursi, Upper Volta 520, roots **518,** 519; *see also* Lily pad
Water pollution: Pesticide contamination 177; *see also* St. Lawrence River, Canada–U. S.
Water strider **138**
Waterfall: Montmorency River, Canada **611**
Waterfowl: Wintering grounds 825, 829; *see also* Ducks
Watermen: ***Chincoteague: Watermen's Island Home.*** By Nathaniel T. Kenney. June, 810-829
Waterways, man-made 203 *see also* St. Lawrence Seaway
Wave breakers, concrete **68-69**
Weaver, Kenneth F. 729; ***The Mystery of the Shroud.*** June, 730-753
Weddings: ***Berber Brides' Fair.*** By Carla Hunt. Jan., 119-129; Civil ceremonies: Estonia 498; Tunisian bride **189**
Weed growth: Compared with grass growth 59-60, 61
Weems, Bill, photographer: ***Home to North Carolina.*** Mar., 333-359
Wei Guoan 327
Weight lifter: Tunisia **206**
Wentzel, Volkmar, photographer: ***Treasure From a Celtic Tomb.*** Mar., 428-438
West, R. A. **351**
Westhampton, N. Y. 668; Duck hatchery 676
Westhampton Beach, N. Y.: Beach club **678-679**
Westward Movement: Mexican Texas, American settlement of 450
Wethy, Roy **667**
Whalers: Long Island, N. Y. 666, 682, 683
Whales: St. Lawrence River, Canada-U. S. 616; Overhunting 616
Whaling: Basques 610, 623; Maze used to trap whales 616
What Voyager Saw: Jupiter's Dazzling Realm. By Rick Gore. Jan., 2-29
Whealton, Christine and Herman **817**
Wheat: Greece: Harvesting **378;** Tibet **231,** 249, 250
Wheeler, H. A. "Humpy" 352
Wheeler, Nik, photographer: ***Berber Brides' Fair.*** Jan., 119-129
Whip: Roman *flagrum* 740, 743, drawing **743**
White, Peter T.: ***Greece: "To Be Indomitable, To Be Joyous."*** Mar., 360-393
White, Thomas Dresser 568
White Mountain, Ariz.: Apache pilgrimage **276-277**
White Mountain Apache: ***The White Mountain Apache.*** Feb., 260-290
I. ***At Peace With the Past, In Step With the Future.*** By Ronnie Lupe. 260-261
II. ***Coming of Age the Apache Way.*** By Nita Quintero. 262-271
III. ***Seeking the Best of Two Worlds.*** By Bill Hess. 272-290
Alcoholism 275, 278, 287
Arts and crafts **263-269,** 269, 270, **280-281,** 285, **285,** 287, 290
Beliefs 260, 263, 264, 269, 275 *see also* Religion, *below*
Burial rites 275, **286,** 287
Ceremonies 275, 278, 285 *see also* Burial rites, *above;* Puberty rites, *below*
Character 260, 290
Culture preserved 260, 261, 267, 275, 279, 284-285 *see also* Arts and crafts, Ceremonies, *above;* Language, Literary culture, Medicine men, Religion, *below*
Dress: Ceremonial **262-269,** 269, 290; Women's **264, 266, 270, 277**
Economic progress of 261, 275, 277, 278, 279-280, 283-284, 290
Goals 261, 275, 290
Hard times 260, 275
Health problems 278, 287
Homeland, ancient 260, 278; Retaining of 277, 278 *see also* Fort Apache Reservation, *outlined*
Infant mortality rate 278, 287
Language 260, 267, 275, 277, 278, 285
Medicine men 261, 262, **267, 269,** 278, **284,** 285, 287, 289-290; Spiritual healing 287, 289
Occupations **272-273, 275,** 280, **283,** 283-284, 287 *see also* Arts and crafts, Medicine men, *above*
Oral tradition 261, 273, 275, 284-285; Recording of 285
Puberty rites 261, **262-271,** 271, 289-290
Religion 260, 264, 269, 275, 277, 278, 285, 290; Christianity 273, 275, 287, 290; Pilgrimage **276-277**
Schooling 260, 271, 288; High school graduate **288**
Social problems 275, 278, 287
Youth **272-273,** 287, **288-290** *see also* Puberty rites, *above*
Whiteriver, Ariz. (reservation community) 275, **278-279;** Hospital **278-279,** 287; Housing project **290;** Puberty-rite ceremony **262-269**
Whittier Boulevard, East Los Angeles, Calif. 802; *vatos locos* **800-801**
Wicker, Tom 348
Wild dogs: Serengeti National Park, Tanzania 712
Wild flowers: Poppy fields: Canada **757-759,** Tunisia **208-209;** ***The Tallgrass Prairie: Can It Be Saved?*** By Dennis Farney. Jan., 37-61
Wildebeests **720-721,** 721; Killed by cheetahs **721**
Wildlife: Africa: ***Cheetahs: In a Race for Survival.*** By George W. and Lory Herbison Frame. May, 712-728; Hokkaido (is-

land), Japan 71, 75, 76, **84,** 85, **85**; North America: ***Heart of the Canadian Rockies.*** By Elizabeth A. Moize. June, 757-779; Oil-spill victims, rescue of 451; Poaching 819, 824, 826
Wildlife management: Fort Apache Reservation 279-280
Wildlife refuges: Assateague Island, Va. 812, 822-823, **824-825,** 828, 829; Nebraska 59
Williams, John Sharp 863
Williams, Mike 477, 478
Williams family: Cabin **864-865**
Wilmington, N. C. 333, 337, 338; Restorations 341, 348
Wilmoth, Wade 345
Wilson, Ian 734
Wilson, Roger 773
Wilson, Tom 767
Wilson, Woodrow: Funeral 562-563; Tomb 560, 562, 565
Wilson, N. C.: Tobacco warehouse **356**
Windmill: Gardiners Island, N. Y. **681,** 682
Winfield, Rodney 568
Winston–Salem, N. C.: *see* R. J. Reynolds Industries
Winter, William **863**
Winter Carnival: Quebec City, Canada 597, **608, 609**
Woessner, Ron 699
Wohler, Dwayne and Bryan **53**
Wolf, Ute **434**
Wolfe, Art: ***Long-eared Owls–Masters of the Night.*** Jan., 31-35
Wolfe, Thomas 348, 354
Wolves: Canada 757, 760, 777, 778, 779; China 327
Wood, Guy "Darry" **359**
Wood-carvers: St.-Jean-Port-Joli, Canada 616, 623; School for 616
Wood carving: Crown-dancer dolls **285,** 287; "La Dame Blanche" **617**
Woods Hole Oceanographic Institution: Pacific Ocean floor studies 1
Woodsmen contest: St.-Irénée, Canada **618-619**
Woodward, Celeste L. **648**
Woodworth Prairie Preserve, Ill. **44, 45**
World politics 291
World War II: Beginning of 485, 489; Greece 368, 373, 391; Tunisia 184, 191
Wright, Stan 773

X

X-ray fluorescence: Shroud of Turin research 750, 752
Xanthi, Greece: Muslims 379
Xinjiang (autonomous region), China: Area 298, 319; Ethnic groups 321, 322 *see also* Kazaks, Uygurs; History 321; Islam 317, 326; Name meaning 319
Xiong family: ***One Family's Odyssey to America.*** By John Everingham. May, 642-661

Y

Yacht race: Long Island Sound **668**
Yak-butter candles 231, **250**
Yalta agreement (1945): Kuril Islands 65
Yamashita, Michael S., photographer: ***Hokkaido, Japan's Last Frontier.*** Jan., 62-93
Yang Yanlin 317, 318
Yang Zhongfen 322
Yangchen (Tibetan) 251
Yates, A. J., Jr. 861
Yatto (Berber) **122**
Yellow River, China: Bridge **310-311;** Silt 305, 310
Yellowhead Pass, Canada **772**
Yevtushenko, Yevgeny **570**
Yotei, Mount, Japan **62-63**

Z

Zhang Liancheng 318
Zhao Sungqiao 300, 301, 305, 317
Zhongwei, China **306-307,** 310
Zhou Enlai 300
Zozpah, Violet 287
Zürn, Hartwig 436
Zweede, Johan 699, 704

INDEXING STAFF

JOLENE M. BLOZIS *Editor*
MARTHA K. HIGHTOWER *Assistant Editor*
JEFFREY A. BROWN
GEORGE I. BURNESTON, III
ANNE K. McCAIN
ELIZABETH MEYENDORFF
BRIT A. PETERSON
SARAH K. WERKHEISER

Volume 158 July-December 1980

NATIONAL GEOGRAPHIC

INDEX

July-December 1980

VOLUME 158

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D. C.

NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

Organized "for the increase and diffusion of geographic knowledge"

GILBERT HOVEY GROSVENOR
Editor, 1899-1954; President, 1920-1954
Chairman of the Board, 1954-1966

THE NATIONAL GEOGRAPHIC SOCIETY is chartered in Washington, D. C., in accordance with the laws of the United States, as a nonprofit scientific and educational organization. Since 1890 the Society has supported more than 1,900 explorations and research projects, adding immeasurably to man's knowledge of earth, sea, and sky. It diffuses this knowledge through its monthly journal, NATIONAL GEOGRAPHIC; its books, globes, atlases, filmstrips, and educational films; *National Geographic WORLD*, a magazine for children age 8 and older; information services; technical reports; exhibits in Explorers Hall; and television.

GILBERT M. GROSVENOR, President
OWEN R. ANDERSON, Executive Vice President
HILLEARY F. HOSKINSON, Vice President and Treasurer
WILLIAM T. BELL, FREDERICK C. GALE, LEONARD J. GRANT,
JOSEPH B. HOGAN, ADRIAN L. LOFTIN, JR., LEWIS P. LOWE,
RAYMOND T. McELLIGOTT, JR., Vice Presidents
EDWIN W. SNIDER, Secretary and Corporate Counsel

BOARD OF TRUSTEES

MELVIN M. PAYNE, Chairman of the Board
ROBERT E. DOYLE, Vice Chairman
LLOYD H. ELLIOTT, Vice Chairman
President, George Washington University
MELVILLE BELL GROSVENOR, Chairman Emeritus
THOMAS W. McKNEW, Advisory Chairman

THOMAS E. BOLGER
Executive Vice President, American Telephone & Telegraph Company

FRANK BORMAN, Chairman of the Board and President, Eastern Airlines

J. CARTER BROWN, Director, National Gallery of Art

WARREN E. BURGER
Chief Justice of the United States

GEORGE M. ELSEY, President, American Red Cross

GILBERT M. GROSVENOR
President, National Geographic Society

ARTHUR B. HANSON, Attorney

CARYL P. HASKINS, Former President, Carnegie Institution of Washington

JEROME H. HOLLAND
Former U. S. Ambassador to Sweden

CARLISLE H. HUMELSINE
Chairman of the Board, The Colonial Williamsburg Foundation

MRS. LYNDON B. JOHNSON

CURTIS E. LEMAY, Former Chief of Staff, U. S. Air Force

WM. McCHESNEY MARTIN, JR.
Former Chairman, Board of Governors, Federal Reserve System

LAURANCE S. ROCKEFELLER
Chairman, Memorial Sloan-Kettering Cancer Center

ROBERT C. SEAMANS, JR.
Dean of the School of Engineering, Massachusetts Institute of Technology

JAMES H. WAKELIN, JR.
Former Assistant Secretary of Commerce for Science and Technology

JAMES E. WEBB, Former Administrator, National Aeronautics and Space Administration

CONRAD L. WIRTH, Former Director, National Park Service

Trustees Emeritus

CRAWFORD H. GREENEWALT
JUAN T. TRIPPE
FREDERICK G. VOSBURGH
LOUIS B. WRIGHT

COMMITTEE FOR RESEARCH AND EXPLORATION

MELVIN M. PAYNE, Chairman
T. DALE STEWART, Vice Chairman
EDWIN W. SNIDER, Secretary

BARRY C. BISHOP, HARM J. DE BLIJ, Professor of Geography, University of Miami, ROBERT E. DOYLE, GILBERT M. GROSVENOR, MELVILLE BELL GROSVENOR, CARYL P. HASKINS, STERLING B. HENDRICKS, Scientist Emeritus, U. S. Department of Agriculture, THOMAS W. McKNEW, BETTY J. MEGGERS, Research Associate-Anthropology, Smithsonian Institution, CHARLES H. SOUTHWICK, Professor of Biology, University of Colorado, GEORGE E. STUART, JAMES H. WAKELIN, JR., GEORGE E. WATSON, Curator of Birds, Smithsonian Institution, FRANK C. WHITMORE, JR., Research Geologist, U. S. Geological Survey, CONRAD L. WIRTH, LOUIS B. WRIGHT, and PAUL A. ZAHL

ASSISTANT VICE PRESIDENTS: James P. Kelly, Ward S. Phelps, Cletis Pride. **ASSISTANT TREASURER:** Alfred J. Hayre. **ASSISTANT SECRETARY:** Earl Corliss, Jr. **ASSISTANTS TO THE PRESIDENT:** Joyce W. Graves, Thomas E. Kulikosky, Richard E. Pearson.

ADMINISTRATIVE STAFF: *Accounting:* Dorothy L. Dameron, Jay H. Givans, Laura L. Leight, William G. McGhee, George E. Newstedt, David H. Peters. *Administration:* D. Evelyn Carnahan, Ruth E. Clark, Robert V. Koenig, Zbigniew Jan Lutyk, Marta M. Marschalko, Myra A. McLellan, Ross L. Mulford, Shirley Neff, Jimmie D. Pridemore, Joyce S. Sanford, Karen F. Shrewsberry, Nell G. Snow, Janet C. Soper, Frank M. Twigger. *Computer:* James G. Schmelzer, William L. Chewning, Ronald C. Kline, Richard A. Mechler. *Educational Services:* Wendy G. Rogers, Dean R. Gage, Carl W. Harmon, Jr. *Employee Benefits:* Howard R. Hudson. *Explorers Hall:* Peter Purpura. *Membership Services:* Margaret L. Bassford, Robert C. Dove, Erma T. Goetzinger, William T. McDonnell, Charles P. Thomas, Paul B. Tylor, Dorothy M. Wagner, Marguerite M. Wise, Peter F. Woods. *Personnel:* Thomas L. Hartman, M.D., Robert E. Howell, Glenn G. Pepperman, Shirley N. Wilson. *Printing:* Joe M. Barlett, Frank S. Oliverio, Margaret A. Slifer, Hans H. Wegner. *Promotion:* Charles T. Kneeland, Robert J. Warfel, Eileen W. Bowering, James R. Dimond, Jr., Robert L. Feige, Joseph S. Fowler, Thomas M. Kent, Mary M. Mosser, Marian B. Platt, F. William Rath, Towne Windom. *Purchasing:* Robert G. Corey, Thomas L. Fletcher, Sheila H. Immel

ADVERTISING: *Director:* James L. Till, 1251 Avenue of the Americas, New York 10020. *Asst. to Dir.:* Blanche Coffey. *Assoc. Sales Director:* George W. Kellner. *Managers—East:* Bart W. McDonnell, New York. *Midwest:* Robert R. Henn, Chicago. *San Francisco:* Cecil H. London. *Los Angeles:* Richard H. Lehman. *Detroit:* George E. Moffat. *International Editions:* Robert W. Horan, New York. *Travel:* Gerald A. Van Splinter, New York. *Europe:* Michel A. Boutin, Paris. *Business Manager:* Peter W. Michaels. *Production Manager:* G. Sarita Lapham

COPYRIGHT © 1981 National Geographic Society, 17th and M Sts. N.W., Washington, D. C. 20036.

MELVIN M. PAYNE *Chairman of the Board*
MELVILLE BELL GROSVENOR *Editor Emeritus*

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT M. GROSVENOR *President*
WILBUR E. GARRETT *Editor*
JOSEPH JUDGE *Associate Editor*

SENIOR ASSISTANT EDITORS

James Cerruti, *Contract Writers* Richard J. Darley, *Cartography*
Robert E. Gilka, *Photography* William Graves, *Expeditions*
Robert P. Jordan, *Special Projects* H. Edward Kim, *Layout*
Howard La Fay, *Articles* Edward J. Linehan, *Manuscripts*
Samuel W. Matthews, *Production* O. Louis Mazzatenta, *Control Center*
Howard E. Paine, *Art* Carolyn Bennett Patterson, *Legends*
Mary G. Smith, *Research Grant Projects* Thomas R. Smith, *Illustrations*
Kenneth F. Weaver, *Science* Ann K. Wendt, *Research*

TEXT

ASSISTANT EDITORS: Rowe Findley, Allan C. Fisher, Jr., Bart McDowell, Elizabeth A. Moize, Merle Severy
SENIOR WRITERS: Thomas J. Abercrombie, David S. Boyer, Thomas Y. Canby, Mike Edwards, William S. Ellis, Rick Gore, Noel Grove, John J. Putman, Peter T. White
SENIOR EDITORIAL STAFF: Harvey Arden, Robert Booth, Kent Britt, John L. Eliot, Boyd Gibbons, Alice J. Hall, Bryan Hodgson, David Jeffery, Michael E. Long, Ethel A. Starbird, Priit J. Vesilind, Gordon Young
EDITORIAL STAFF: Allen A. Boraiko, Larry Kohl, Douglas Lee, John L. McIntosh, Cathy Newman, Cliff Tarpy
RESEARCH: Frances H. Myers (Associate Chief); *Researcher-Editors:* Susan L. Anderson, Judith Brown, Lesley B. Rogers, Michaeline A. Sweeney. *Researchers:* Carolyn H. Anderson, Julia A. Gamble, Ann B. Henry, Jan Holderness, Patricia B. Kellogg, Kathy B. Maher, Jean B. McConville, Jeannie E. Peters, Frances W. Shaffer, Barbara L. Wyckoff. *Geographic Information:* Bette Joan Goss. *Legends:* Abigail A. Tipton

ILLUSTRATIONS

PHOTOGRAPHERS: Dean Conger, Joseph J. Scherschel (Assistant Directors); James L. Amos, Joseph H. Bailey, James P. Blair, Victor R. Boswell, Jr., Jodi Cobb, Bruce Dale, Gordon W. Gahan, David Alan Harvey, Otis Imboden, Emory Kristof, Joseph D. Lavenburg, Bianca Lavies, Bates Littlehales, Robert W. Madden, George F. Mobley, Robert S. Oakes, Steve Raymer, Robert F. Sisson *(Natural Science)*, James L. Stanfield, Volkmar Wentzel *(Archivist)*. *Administration:* Claude E. Petrone, Susan A. Smith
ILLUSTRATIONS EDITORS: W. Allan Royce (Assistant Director); David L. Arnold, Taylor Gregg, Declan Haun, Bruce A. McElfresh, Charlene Murphy, Robert S. Patton, Elie S. Rogers, Jon Schneeberger
LAYOUT: Constance H. Phelps
ART: William N. Palmstrom, J. Robert Teringo (Associate Directors); Walter Q. Crowe, John D. Garst, Jr. (Assistant Directors); Elie Sabban (Production). *Artists:* Lisa Biganzoli, William H. Bond, John W. Lothers, Ned M. Seidler. *Map Editors:* John T. Blozis, Gus Platis. *Research:* Virginia L. Baza, Harold A. Hanson (Supervisors); Ross M. Emerson, Margaret Deane Gray, Dorothy A. Nicholson. *Map Artists:* Isaac Ortiz, Leo B. Zebarth (Supervisors); Iskandar Baday, Peter J. Balch, Snejinka Stefanoff, Alfred L. Zebarth
DESIGN: Charles C. Uhl, Betty A. Clayman, Robert E. Pullman
ENGRAVING AND PRINTING: William W. Smith (Director); James R. Whitney (Associate Director); Bill M. Aldridge, John T. Dunn

CARTOGRAPHY

John F. Shupe (Associate Chief); Ted Dachtera, Richard K. Rogers (Assistant Chiefs); John F. Dorr (Art Director); Margery K. Barkdull, Charles F. Case, Henri A. Delanghe, Russel G. Fritz, Martin J. Golden, Charles W. Gotthardt, Jr., Thomas A. Gray, Catherine M. Hart, Karen P. Jacoby, Harry D. Kauhane, Mary C. Latham, Mary Anne McAleer, Charles L. Miller, Roland R. Nichols, Robert W. Northrop, Charles L. Stern, Douglas A. Strobel, Tibor G. Toth, Thomas A. Wall, Thomas A. Walsh, Elizabeth Wolf, Susan Young

EDITORIAL SERVICES

ADMINISTRATION: M. Jean Vile (Assistant to the Editor), Elaine Rice Ames, Marie L. Barnes, G. Merrill Clift, Neva M. Collins, Lilian Davidson, Virginia H. Finnegan, Eleanor W. Hahne, Mary F. Klemann, Lucille L. McInerney, Patricia M. Oakes, Barbara A. Shattuck. *Correspondence:* Carolyn F. Clewell, Clifford R. DuBois. *Indexes:* Jolene M. Blozis. *Travel:* Virginia A. Bachant
LIBRARIES: *Publications:* Virginia Carter Hills (Librarian); Patricia Murphy Smith, Carolyn Locke, Louise A. Robinson, Susan Fifer Schutt, Marta Strada. *Illustrations:* L. Fern Dame, Carolyn J. Harrison, M. Scott Bolden. *Records:* Lorie Northrop, Mary Anne McMillen, Marguerite S. Northwood, Mennen M. Smith. *Films:* Betty G. Kotcher
NEWS SERVICE: Paul Sampson (Chief); Donald J. Frederick, Ellen E. Kohlberg, Barbara S. Moffet, William J. O'Neill, Robert C. Radcliffe
PHOTOGRAPHIC LABORATORIES AND TYPESETTING: Carl M. Shrader (Chief); Milton A. Ford (Associate Chief); Lawrence F. Ludwig (Assistant Chief); Herbert Altemus, Jr., Billy R. Barnett, Richard A. Bredeck, David H. Chisman, Ellwood M. Kohler, Jr., Geoffrey T. McConnell, Arletta M. Molinari, William S. Petrini, Bernard G. Quarrick, Joan S. Simms, James H. Trott, Alfred M. Yee

RELATED EDUCATIONAL SERVICES OF THE SOCIETY

ROBERT L. BREEDEN *Vice President*

SENIOR ASSISTANT EDITORS: Donald J. Crump, *Special Publications and School Services;* Charles O. Hyman, *Book Service*
BOOK SERVICE: Kenneth C. Danforth (Assistant Director); Thomas B. Allen, Ross Bennett, Mary H. Dickinson, Karen F. Edwards, Robert C. Firestone, Anne Dirkes Kobor, J. Edward Lanouette, Carol Bittig Lutyk, Linda B. Meyerriecks, David F. Robinson, Shirley Scott, David M. Seager, Margaret Sedeen, Verla Lee Smith, George E. Stuart, Anne E. Withers
SPECIAL PUBLICATIONS AND SCHOOL SERVICES: Philip B. Silcott (Associate Chief); William L. Allen, Jody Bolt, Toni Eugene, Seymour L. Fishbein, Ron Fisher, Patricia F. Frakes, William R. Gray, Barbara Grazzini, Sallie M. Greenwood, Mary Ann Harrell, Suzanne J. Jacobson, Bonnie S. Lawrence, Christine E. Lee, Geraldine Linder, Tee Loftin, Louisa V. Magzanian, Tom Melham, Robert Messer, H. Robert Morrison, Raja D. Murshed, Thomas J. O'Neill, Thomas B. Powell III, Cynthia Ramsay, Kathleen F. Teter, Jennifer C. Urquhart, George V. White, Merrill Windsor. *National Geographic WORLD:* Ralph Gray (Editor); Pat Holland, Ellen Joan Hurst, Margaret McKelway, Pat Robbins, Eleanor Shannahan, Veronica Smith, Ursula Perrin Vosseler. *Educational Media:* George Peterson (Editor); Jimmie Abercrombie, James B. Caffrey, Margery G. Dunn, Jacqueline Geschickter, Jane R. McCauley, Judith E. Rinard
TELEVISION AND FILMS: Dennis B. Kane (Chief); Sidney Platt (Manager, Educational Films); Donald M. Cooper, Anne B. K. Krumbhaar, Yeorgos N. Lampathakis, Louise C. Millikan, Marjorie M. Mooney, Patricia F. Northrop, Nola L. Shrewsberry, Carl E. Ziebe.
AUDIOVISUAL: Joanne M. Hess (Chief); Jon H. Larimore (Technical Director); Ronald S. Altemus, Robert G. Fleegal, Mary W. McKinney, Gerald L. Wiley

Contents

Page

JULY 1980

EDITOR'S PAGE 1

SHANGHAI: BORN-AGAIN GIANT 2
By Mike Edwards, with photographs by Bruce Dale
Double supplement included—*The People's Republic of China* and *The Peoples of China*

THE PONY EXPRESS 45
By Rowe Findley, with photographs by Craig Aurness

RETURN TO UGANDA 73
By Jerry and Sarah Kambites, with photographs by Sarah Leen

THE BULGARIANS 91
By Boyd Gibbons, with photographs by James L. Stanfield

ANCIENT BULGARIA'S GOLDEN TREASURES 112
By Colin Renfrew, with paintings by Jean-Leon Huens and photographs by James L. Stanfield

GIANT OTTERS: "BIG WATER DOGS" IN PERIL 130
By Nicole Duplaix, with photographs by the author and Bates Littlehales

AUGUST 1980

EDITOR'S PAGE 143

OUR MOST PRECIOUS RESOURCE: WATER 144
By Thomas Y. Canby, with photographs by Ted Spiegel

MILWAUKEE: MORE THAN BEER 180
By Louise Levathes, with photographs by Michael Mauney

MAN'S EIGHTY CENTURIES IN VERACRUZ 203
By S. Jeffrey K. Wilkerson, with photographs by David Hiser and paintings by Richard Schlecht

BORDEAUX: FINE WINES AND FIERY GASCONS 233
By William Davenport, with photographs by Adam Woolfitt

KITTY HAWK FLOATS ACROSS NORTH AMERICA 260
By Maxie and Kristian Anderson

THE WILD WORLD OF COMPOST 273
By Cecil E. Johnson, with photographs by Bianca Lavies

SEPTEMBER 1980

EDITOR'S PAGE 285

SAUDI ARABIA: THE KINGDOM AND ITS POWER 286
Article and photographs by Robert Azzi

ISLAM'S HEARTLAND, UP IN ARMS 335
By Thomas J. Abercrombie
Double supplement included—*Two Centuries of Conflict in the Middle East* and *Mideast in Turmoil*

HURRICANE! 346
By Ben Funk, with photographs by Robert W. Madden

DOMINICA 357
By Fred Ward

PATHS OF FURY—THIS CENTURY'S WORST AMERICAN STORMS 360

INTO THE EYE OF DAVID 368
By John L. Eliot

DYNAMICS OF A HURRICANE 371

MADAWASKA: DOWN EAST WITH A FRENCH ACCENT 380
By Perry Garfinkel, with photographs by Cary Wolinsky

UNDERSEA WORLD OF A KELP FOREST 411
By Sylvia A. Earle, with photographs by Al Giddings

Page

OCTOBER 1980

EDITOR'S PAGE 427
MY CHESAPEAKE—QUEEN OF BAYS 428
By Allan C. Fisher, Jr., with photographs by Lowell Georgia
POMPIDOU CENTER, RAGE OF PARIS 469
Photographs by Marc Riboud, with text by Cathy Newman
THE GAUCHOS, LAST OF A BREED 478
By Robert Laxalt, with photographs by O. Louis Mazzatenta
BAMBOO, THE GIANT GRASS 502
By Luis Marden, with photographs by Jim Brandenburg
ALBANIA, ALONE AGAINST THE WORLD 530
Article and photographs by Mehmet Biber
LIFE ON A ROCK LEDGE 558
Article and photographs by William H. Amos

NOVEMBER 1980

EDITOR'S PAGE 567
AFRICA'S ELEPHANTS: CAN THEY SURVIVE? 568
By Oria Douglas-Hamilton, with photographs by Oria and Iain Douglas-Hamilton
WINDSOR CASTLE 604
By Anthony Holden, with photographs by James L. Stanfield
ROYAL HOUSE FOR DOLLS 632
By David Jeffery, with photographs by James L. Stanfield
ARNHEM LAND ABORIGINALS CLING TO DREAMTIME 644
By Clive Scollay, with photographs by Penny Tweedie
MINNEAPOLIS AND ST. PAUL 665
By Thomas J. Abercrombie, with photographs by Annie Griffiths
BAJA'S MURALS OF MYSTERY 692
By Harry Crosby, with photographs by Charles O'Rear

DECEMBER 1980

EDITOR'S PAGE 703
THE AZTECS 704
THE AZTECS 714
By Bart McDowell, with photographs by David Hiser and paintings by Felipe Dávalos
THE BUILDING OF TENOCHTITLAN 753
By Augusto F. Molina Montes, with paintings by Felipe Dávalos
NEW FINDS IN THE GREAT TEMPLE 767
By Eduardo Matos Moctezuma, with photographs by David Hiser
Double supplement included—*Visitor's Guide to the Aztec World* and *Mexico and Central America*
COAL VS. PARKLANDS 776
By François Leydet, with photographs by Dewitt Jones
AFTER AN EMPIRE . . . PORTUGAL 804
By William Graves, with photographs by Bruno Barbey
FATIMA: BEACON FOR PORTUGAL'S FAITHFUL 832
By Jane Vessels, with photographs by Bruno Barbey
JACKALS OF THE SERENGETI 840
Article and photographs by Patricia D. Moehlman

Index VOLUME 158 JULY-DECEMBER 1980

July	pp. 1-142	October	pp. 427-566
August	pp. 143-284	November	pp. 567-702
September	pp. 285-426	December	pp. 703-850

Titles and illustrations in bold face

A

Abalone: Host, plant and animal 418; Overexploitation of 419
Abbott, Edward "Epps" 447, **451,** 452-453
Abdel-Hamid Abdel-Ghani 343
Abdulaziz, King (Saudi Arabia) 298, 301, 314, 322, **322,** 323, 328, 332
Abdulaziz (son of Crown Prince Fahd) **323**
Abdullah, Prince (Saudi Arabia) 304, 322
Abercrombie, Bruce and Pat 689
Abercrombie, Thomas J.: ***Islam's Heartland, Up in Arms.*** Sept., 335-345; ***Minneapolis and St. Paul.*** Nov., 665-691
Aboriginals: ***Arnhem Land Aboriginals Cling to Dreamtime.*** By Clive Scollay. Nov., 644-663
Alcoholism 651, 652
Arnhem Land Reserve: Ownership 652; *see also* Arnhem Land, *outlined*
Bark painting 646, **646,** 647, **647,** 649, 652, 655-656, 659, 663
Body painting **644-645, 648, 656-657,** 663
Burial log 660, **661**
Circumcision rite **644-645, 656-657,** 657, 659, 663
Clans 649; Clan designs **644-645, 656-657,** 663; Elders; heads of 646, 649, **650, 653**
Councils 650, 652
Education 654
Families 649, **650-651,** 652, 655, 657, **662**
Hunting and gathering 646, 649, 651, 654, 659; Pelican quarry **650**
Marriage customs: Changing 654, 660; Polygamy 649, 651, 652, 655, 660
Material goods **646,** 649, 650, **650, 653,** 655, 663
Mythology 646, 647, 649, 655, 656, 663; Dreaming 652, 654; Water holes 647, 656
Population 649
Rites 660, 663; Dances **648, 658-659,** 663; *see also* Circumcision rite, *above*
Abraham: Islamic history 314
Acacia trees: Destroyed by elephants **574**
Acadian Festival Week: Maine 394
Acadians (French colonizers): Canada 385, 388; Deportation of 385, 394
Acid rain: Cause 160, 168; Countermeasures **160-161;** Fish depletion 160, 168; Marble, effects on **160**
Acoustical engineering: Minnesota Orchestra's hall **672**
Actinomycetes 273, **276**
Acupuncture: Chinese surgery 28
Adams, John Maxwell 689
Addo Elephant National Park, South Africa 591
Adirondack Mountains, N. Y.: Acid rain: Lakes contaminated 168, fish, disappearance of 160, 168, treatment for **160-161;** Source 160, 168
Adoulins, France 236
Adriatic Sea: Albanian coast **550**
Advertisements: China **41;** Pony Express 45, **45, 47**
Aerial performers: *voladores* **209, 212,** 213, 231, 750-751, Aug. cover
Aeronautics *see* Balloons
Afghanistan: ***Islam's Heartland, Up in Arms.*** By Thomas J. Abercrombie. Sept., 335-345; Soviet occupation of 285
Africa: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603; *see also* Serengeti Plain, Tanzania; Uganda
African tribes *see* Baganda; Kakwa
After an Empire...Portugal. By William Graves. Dec., 804-831
Agriculture: ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179; Runoff, water pollution and 446, 452; *see also* Potato farming; Winegrowing; *and* Albania; Bulgaria; Portugal; Veracruz
Aguay, Estancia, Argentina 478, 493
Ahmad Rashad 678, **691**
Ahmed Zaki Yamani, Sheikh 296-297, **304, 305**
Ai Bunar (prehistoric site), Bulgaria: Copper mine 121, 122
Air pollution: Acid rain and 160, 168; Utah national parks 782, 783, 793, **794, 796,** monitoring **781,** 782, 795, **795, 800,** threat of 788
Air-pollution cleanup: Bethlehem Steel 460
Air-raid shelters: China 26
Aircraft: Airplane, ditched: Allagash River, Maine **352;** Bamboo airframes 508; C-46 transport: Hurricane-damaged **352**
Aircraft, research 365; ***Into the Eye of David*** (hurricane). By John L. Eliot. Sept., 368-369
Airports, world's largest 296
Albania, Alone Against the World. By Mehmet Biber. Oct., 530-557
Agriculture: Cooperatives 545, 551, 555, 557; Crops 545, **548-549,** 550; Cultivated land doubled 545, 550; Private-plot farming 555
Atheism 533, 553, 554; Persecution of religious groups 554, property confiscated 554
Border-nation aggression 552
Capital *see* Tirana
Civil defense: Bunkers 552-553
Defense 546, 552, 553
Dictatorship, totality of 530, 537, 551, 552, 554, 557
Economy 539, 551; Exports 532, 545, 546; Imports limited 545, 551
Education 544, 546, 551, 556; Ballet school **542-543;** Literacy rate 543, 546
Energy resources 545
Ethnic groups 537, 553; Blood feuds 537, 540, 553, 556; Ghegs, traditional dress of **553;** Tribal customs; laws, abolishment of 553, 556, "law of the mountains" extant 553
Flag **539;** History 553
History: Independence (1912) 539; Invasions of 532, 539, 552; National hero 553; *see also* World War II, *below*
Income, personal 544, 545, 551
Industry 544-545, 551, 556, 557
Isolationism 530, 532, 537, 544, 545, 552, 557
Labor projects, citizen participation in **538-539,** 544, 546
Map 539
Marriage customs 533; Reforms 553, 556
National character 552, 557
The plan 551
Population 533, 539, 552
Press, state-controlled 543-544
Propaganda: Directorate 557; Slogans 530, 533, 544, banners 530, **531, 534, 536,** 544
Recreational facilities 544, 551
Religion, renouncing of 533, 539, 553-554
Transportation **530-533,** 539, 543, 544; Cars banned, private 530, 543; International transit limitations 532
Visitors: Rules governing 532-533, 537, 543
Women: Changing status of 546, 556; Military service 552
Workday; workweek 544

World War II 532, 537, 539, 552, 553; Partisan soldier **552,** 553
Albena, Bulgaria: Hotels, tourist **109**
Albert, Prince Consort (Great Britain) 611, 615, 619
Albert, Jeannine, and family **398-399,** 400
Alcoholism: Aboriginals 651, 652
Alentejo (region), Portugal 813, **823;** Climate 826; Land reform 822, 826-827
Alexander II, Tsar (Russia): Statue **100**
Alexander Nevski Cathedral, Sofia, Bulgaria **100, 101,** 102; Choir 103
Algae: Aztec food 727; California waters *see* Kelp; *Dictyota flabellata* **423;** Filamentous **559;** Food chain 416, 418, 559; Fungi and 565; Spirolina **727**
Algarve (region), Portugal: Hotels 814, **828-829;** Refugee housing 814; Tourist industry 814, 815, 828
Algosaibi, Ghazi 344
Ali ibn Muhammad 298
All Souls' Day: Mexico 749, 751; Talismans **748-749**
Allagash, Maine 380, 401; Dam, proposed: Inundation and 386, 401, 405; School 406, **406-407,** graduating class (1979) **407**
Allagash River, Maine **404-405**
Allen-Bradley Company, Milwaukee, Wis. 180, 192, 197
Allen-Warner Valley Energy System (proposed): ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
Alton coalfield, Utah 803; Development of, proposed 778, 779, 783, 787, 788, 791, 796, opposition to 790, transport system *see* Coal-slurry pipelines; Map 778; Total reserves 795
Alves, Isabel 815, 818, 822
Amagula, Nandjiwarra 660
Ambrosia Chocolate Company, Milwaukee, Wis. 180
American Indian Movement (AIM), St. Paul, Minn. 675
Amin, Hafizullah: Assassination 335
Amin, Idi 74, 75, 76, 84, 578, 584; Rule 73, 75, 84
Amoebas 565
Amos, William H. **558;** ***Life on a Rock Ledge.*** Oct., 558-566
Ancient Bulgaria's Golden Treasures. By Colin Renfrew. July, 112-129
Anderson, Maxie and Kristian: **Kitty Hawk** ***Floats Across North America.*** Aug., 260-271
Andromeda (motor sailer) 461
Andrus, Cecil D. 781
Angel shark *(Squatina california)* **422,** 423, 426
Angola: Independence 813, 814
Animal behavior *see* Elephants, African; Giant Brazilian otters; Jackals
Annapolis, Md. 447, **458-459**
Anne, Princess (Great Britain) 626, 630
Ansola, Don José Antonio 500
Antelope (paddle steamer) 67, **70**
Anti-poverty programs: Rural Virginia water systems, upgrading of 156
Ants **563,** 565
Aphrodisiacs: Rhinoceros horn 528; Tabasheer 516
Apoera, Suriname: Development project 142; Population 142
Appalachians (mountains), U. S.: Water shortages 156
Apple-seed snail **564**
Aquaculture: Aztecs 725, 727; Mexico 727, *chinampas* **724-725,** 738
Aquifers: United States 150, 158, 778, 787, 790; Chemical pollution 170; Depletion of 158-159, 161; Maps 150-151, 778-779; Recharging 161
Aquirre, Gregorio 486
Aquitaine, duchy of (Middle Ages) 239, 241, 253, 256
Aquitaine, principality of 241
Aquitania (Gallo-Roman province) 233, 238, 239, 240
Arab-Israeli conflict 297, 305, 330, 335, 339, 340-343
Arab nations: ***Islam's Heartland, Up in Arms.*** By Thomas J. Abercrombie. Sept., 335-345; Oil wealth, mixed blessing of 285; ***Two Centuries of Conflict in the Middle East; Mideast in Turmoil.*** Sept. supplement; Western culture, resist 285; *see also* Saudi Arabia
Arabian American Oil Company (Aramco): Saudi Arabia 302, 327; Employee facilities **320, 329;** Ownership 319, 328; Supertanker loading docks **302-303**
Arafat, Yasir 339, 340
Arafat, Plain of, Saudi Arabia: Pilgrim caravan **309-311**
Aramco *see* Arabian American Oil Company
Arcachon Basin, France **254-255;** Oystering 239, 254-255
Arcaded streets: Bordeaux (region), France 239, **256**
Arce, Tacho 698, **699**
Archaeology: ***Ancient Bulgaria's Golden Treasures.*** By Colin Renfrew. July, 112-129; ***The Aztecs.*** Dec., 704-775; ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231; *see also* Art, primitive
Arches National Park, Utah 782, **792-793;** Air pollution 783, 793, **794,** monitoring **795**
Architecture: Domestic, 18th-and-19th century: Bulgaria **105,** Milwaukee, Wis. **182,** 187, 189, Victorian **683;** El Tajín culture (pre-Columbian Mexico) **206-211,** 211, 216; French Second Empire 189; ***The Grandeur of Windsor.*** By David Jeffery, Nov. 616-625; Middle Ages: Bastides, French and English 239, **256;** 19th century: Milwaukee, Wis. 189 *see also* Domestic, *above;* ***Pompidou Center, Rage of Paris.*** By Marc Riboud. Oct., 469-477; *see also* Earth-sheltered housing
Argentina: ***The Gauchos, Last of a Breed.*** By Robert Laxalt. Oct., 478-501
Arizona: Irrigation 169, 173; Water project 173, construction **176-177**
Arkansas River, U. S. 150
Arlidge, John 788, 799, **800**
Armajani, Mike 689
Armor, suits of 615, **622;** Miniature **634, 635**
Arnhem Land, Australia: ***Arnhem Land Aboriginals Cling to Dreamtime.*** By Clive Scollay. Nov., 644-663
Aboriginal Reserve: Established 649; Federal funding 650; Ownership transferred to Aboriginals 652
Bushfires **652-653,** 657, 659
Map 649
Mining 650-651, 652; Mineral rights owned by Australian government 652; Survey crews 652, 653, 663, Aboriginals protest 653, **653,** 663
Outstations, Aboriginal 649, 650, 652, 654-655; Map 649
Population, Aboriginal 649
Rock art 655, **661**
Aroostook County, Maine 400; Potato growing 401, fields **382-383**
Arp, Duane 57
Arp, Jean: Sculpture by **474**
Arrows, bamboo **522;** Fletching **523**
Art: Baroque decorations: Porto, Portugal, church **816-817;** ***The Grandeur of Windsor.*** By David Jeffery. Nov., 616-625; Monastic: Bulgaria **107;** Pre-Columbian *see* Aztecs; El Tajín; *see also* Art, primitive; Pop art
Art, primitive: ***Arnhem Land Aboriginals Cling to Dreamtime.*** By Clive Scollay. Nov., 644-663; ***Baja's Murals of Mystery.*** By Harry Crosby. Nov., 692-702
Arthropods: ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
Arts and crafts: Cutout tin artwork **469;** Sand painting **179;** Wood carvings **392, 393,** 394; *see also* Dollhouse; Goldwork
Ascot Week: Windsor Castle guests 611, 612, 614
Asia: ***Islam's Heartland, Up in Arms.*** By Thomas J. Abercrombie. Sept., 335-345; *see also* China
Asir Province, Saudi Arabia **315,** 319; Architecture, layered **317**

Atheism: Albania 533, 539, 553-554
Atlantic Intracoastal Waterway 441
Atlas Minerals' uranium mill, Utah: Air pollution **794;** Monitoring **795**
Auch, France 236, 239
Aurness, Craig, photographer: ***The Pony Express.*** July, 45-71
Australia *see* Arnhem Land
Australian aborigines *see* Aboriginals
Automobiles, miniature: 1920s models **642-643**
Aveiro, Portugal: Moliceiros **806-807, 826**
Aztecs:
The Aztecs. Dec., 704-775: I. ***The Aztecs.*** By Bart McDowell. 714-751; II. ***The Building of Tenochtitlan.*** By Augusto F. Molina Montes. 753-765; III. ***New Finds in the Great Temple.*** By Eduardo Matos Moctezuma. 767-775; IV. ***Visitor's Guide to the Aztec World*** (supplement)
Architecture *see* Great Temple of Tenochtitlan; Tenochtitlan, *outlined*
Armaments **740-741;** Shield **743**
Calendar stone *see* Stone of the Fifth Sun
Cannibalism 714, 730, 750; Aztec illustration **750;** Theories 750
Capital *see* Tenochtitlan
Codices: Aztec document *see* Borbonicus Codex; Illustrations from **723, 750, 752, 760;** Spanish-directed 723, 762 *see also* "General History of the Things of New Spain"
Dress **728-729,** 729, 731, 738, 745; Ritual combat **740-743,** 749
Foods 714, **727,** 732, 734-735
Glyphs 726, 735, **757-758,** 759
History *see* Migration; Spanish conquest, *below; and* "General History of the Things of New Spain"
Human sacrifice 714, 718, 726-727, 750, 756, 759, 762, 772, 774; Aztec drawing of **750;** Children 714, 763; Description 772; Purpose of 720, 730, 738, 741, 745, 773; *see also* Cannibalism, *above*
Language *see* Nahuatl
Legends 713, 770, 772
Markets **728-729,** 745
Migration 722-723, 726, 732
Poetry 704; Quoted 720, 722, 732, 738, 751, 753
Pulque 730, 731
Pyramids **706-707, 754-756,** 761, 764, **764-765** *see also* Great Temple of Tenochtitlan
Religion 720, 735, 756, 759, 762; Beliefs; myths 707, 720, 722-723, 726, 759, 760, 767, 770, 772; Death 745, 747, 749, 751; Deities: Chief deities *see* Huitzilopochtli; Tezcatlipoca, number of 731, 762; Rites 738, **740-741,** 743, **744,** 762 *see also* Human sacrifice, *above;* Temples **706-707,** 750, **754-756,** 756, 761, 764, **764-765** *see also* Great Temple of Tenochtitlan
Sculpture **707, 710-711, 719-721,** 731, **739,** 761, **766-767,** 769, **770,** 772, **772-773,** 774, **775** *see also* Stone of the Fifth Sun
Spanish conquest 718, 732, 753, 759, 761, 764, 765, 775
Symbolism, animal *see* Eagles; Jaguars; Snakes
Trade goods 728-729, **728-729**
Water systems; water diversion 727, 735, 738
Women 730, 731, 762
Spanish, conquered by 204, 205
Tribute list **225**
Aztlan (Aztec "place of the herons") 720, 770
Azzi, Robert: ***Saudi Arabia: The Kingdom and Its Power.*** Sept., 286-333

B

Babani, Bashkim 544, 557
Bacteria: ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
Baganda (tribe): ***Return to Uganda.*** By Jerry and Sarah Kambites. July, 73-89
Ceremonies *see* Clan system; Introduction, *below*
Clan system 79; Initiation ceremony 79, 83
Family structure 79, 83; *maamas* and *taatas* 78, 83
Introduction, rite of **72,** 73, 83
Language 75
Marriage restrictions 79
Political history 75, 83-84; King, former *see* Edward Frederick Mutesa II
Religion 75, 82, 86
Bagé, Brazil: Rodeo **483-485**
Bagley, David, and family **53**
Baja's Murals of Mystery. By Harry Crosby. Nov., 692-702
Balinga, Victor Sunday 602
Balkan Mountains, Bulgaria 93, 96, 104
Balkan Wars: Bulgaria 95
The Balkans: Archaeological sites (map) 117; *see also* Albania; Bulgaria
Ball game ritual: El Tajín culture (pre-Columbian Mexico) 209, 216, 217, 219, 222; Depicted **222-223**
Ballet class: Albania **542-543**
Balloons: **Kitty Hawk** ***Floats Across North America.*** By Maxie and Kristian Anderson. Aug., 260-271
Baltimore, Md.: Harbor channel 441, **466,** proposed deepening of, controversial 441, 456, shipping 441, **466;** Sewage treatment 460
Baltimore Gas & Electric Company: Nuclear power plant 460; Radioactive-gas leaks (1980) 460
Bamboo, the Giant Grass. By Luis Marden. Oct., 502-529
Bamboo, carbonized: Light bulb filament 522, **529**
Bamboo shoots 515, **518-519**
Bamboo wife 516
Bander al-Faisal, Prince (Saudi Arabia) 322, 327
Bantu (linguistic group): Uganda 75, 83, 84
Baoshan Steelworks, Shanghai, China: Construction **12-13,** 43
Barbecue (Argentine *asado*) **497**
Barber poles **685;** Sole maker of (North America) **685**
Barbey, Bruno, photographer: ***After an Empire . . . Portugal.*** Dec., 804-831; ***Fátima: Beacon for Portugal's Faithful.*** Dec., 832-839
Bark paintings: Aboriginals 646, **646,** 647, 649, 652, 655, 659, 663; Currency design **647,** 655-656
Baroque art: Church facade: Porto, Portugal **816-817**
Basket, miniature **508**
Basque gauchos 498-499
Bass, striped: Chesapeake Bay 453; Decline of 446, 453; Dominant-year reproduction: Weather and 453; Spawning 453; Trace minerals and chemicals in 453
Bautista, Gaspar 738
Bauxite: Australia 650, 651
Baytown, Texas: Subsidence **146-147**
Beauty parlor: China **40-41**
Bedouin: Saudi Arabia 286, 291, **291, 300-301,** 301, 314, 330, 332
Beetles 563; Hister beetle **275**
Beeton, Alfred 162-163
Begin, Menachem 340, 341
Beirut, Lebanon 339; Civil war 339, 340, **343**
Bellanger, Pat 675
Beman, S. S. 189
Benanoo, Moli 138
Bender, Michael 453, 456
Bernal, Ignacio 722, 723
Berón de Astrada, Argentina, and region: Lake **480-481**
Berry, Mickey 319
Bethlehem Steel: Pollution cleanup 456, 460; Water cleansing 460
Beynac, Castle, Bordeaux (region), France **235**
Biber, Mehmet 530; ***Albania, Alone Against the World.*** Oct., 530-557
Big John's Tap (tavern), Milwau-

kee, Wis. 193-194
Billboard: China **41**
Binaisa, Godfrey 74, 84
Bininuwuy (Aboriginal) 646, 647, 649, 663
Biochemistry: ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
Bioluminescence: Marine life 422-423, **423**
Birch, dwarf **561-562**
Black, Troy 795
Black-backed jackals *see* Silver-backed jackals
Black bamboo 511, **520;** Flowering 522; Medicinal uses 515
Black Lagoon (chemical dumpsite), Oswego, N. Y. **154-155,** 166
Black market: Bulgaria 109; Uganda 77
The Black Prince (Edward, Prince of Wales) 241
Black Sea: Beaches **108,** 109, **109**
Blacks: Milwaukee, Wis. 185, 197, 199-200, 201
Blacksmiths (fish) 416, **420-421**
Blue crabs: Chesapeake Bay **430,** 440, **448, 449**
Blueberry **561-562**
Boats: Log canoes **432, 433;** Moliceiros **806-807, 826;** Racing shell **459**
Body painting: Aboriginals **644-645, 648, 656-657,** 663
Bokassa, Jean Bedel 596
Bolas *(boleadoras)* 482, 500; Souvenirs 496
Bone artifacts: Bulgaria 119, **119**
Bongo, Albert-Bernard 591
Bonze, Miguel Angel **494**
Book burning: Cultural Revolution, Chinese 27, 33
Books, bamboo 510, 528
Borbonicus Codex: Aztec deities 762; Illustrations from **760**
Bordeaux (city), France 233, 239; Port **256;** Redevelopment **257,** 258-259
Bordeaux (region), France: ***Bordeaux: Fine Wines and Fiery Gascons.*** By William Davenport. Aug., 233-259
Agriculture *see* Farms and farming, *below;* Winegrowing, *outlined*
Bastides 239, **256**
Churches 241, **243, 256,** 257
Cuisine 236, 239, **252, 253,** 255; Bases 240
Farms and farming 236, **237,** 239
French annexation of (1453) 233, 241; Resistance to 233, 236, 241, 256-257
Industry 251, 258, **258-259** *see also* Winegrowing, *outlined*
Map, locating wine districts and chateaux 238
Nuclear power plant **258-259**
The people 233, 236, 241, 249, 259; English heritage 239, 241, 253; Ethnic origins 236, Celtic ancestors 240, 241; Language 236, 238, 239
Political history *see* Aquitaine, duchy of; Aquitaine, principality of; Aquitania (Gallo-Roman province); French annexation, *above;* Gascony
Wines *see* Winegrowing; wines, *outlined*
Writers 233, 236, 239, 249
Bordelais (region), France; ***Bordeaux: Fine Wines and Fiery Gascons.*** By William Davenport. Aug., 233-259
Borman, Bryan 180, 184
Bowell, William 689
Boynton, Walter 453
Brandenburg, Jim, photographer: ***Bamboo, the Giant Grass.*** Oct., 502-529
Breier, Harold 197
Breweries: Milwaukee, Wis. 184, 193, 194; Brewhouse **198;** Brewing techniques 194; Executives **192-193,** 194; Map locating 185
Brezhnev, Leonid: Portrait of: Bulgaria 96
Bridges: Bamboo cables 516
Bronco-busting contest: Gauchos **484-485**
Bronze: Prehistoric Europe 121
Bronze artifacts: Bulgaria 117, **119,** 123, **124, 125**
Brooke, John 630
Bryce Canyon National Park, Utah **780-781,** 781, **783;** Coal development adjacent to, proposed *see* Alton coalfield
Bryceson, Derek 584
A Buckaroo Stew of Fact and Legend: The Pony Express. By Rowe Findley. July, 45-71
Buckwheat: Uses of 387 *see also ployes* (buckwheat pancakes)
Buckwheat mill: Upper Frenchville, Maine 380, 387
Bucyrus-Erie Company, Milwaukee, Wis. **197**
Buddha's belly bamboo 511
Buerger, Ben 372, **379**
Buffalo Bill *see* Cody, William F.
Buganda (former kingdom), Uganda 74, 75, 83, 86; Map locating 75; Monarchy abolished 79, 83, 84
The Building of Tenochtitlan. By Augusto F. Molina Montes. Dec., 753-765
Bukasa Island, Uganda **85,** 86, 88; Child **81;** Mud-walled house **86-87**
Bulagulwa, Patrick 87, 88
Bulgaria, People's Republic of: ***Ancient Bulgaria's Golden Treasures.*** By Colin Renfrew. July, 112-129; ***The Bulgarians.*** By Boyd Gibbons. July, 91-111
Agriculture: Agro-industrial complexes 91, 97, 104, **111;** Greenhouse growing **110-111;** *see also* Farming, *below*
Border dispute 95, 100
Capital *see* Sofia
Consumer goods, shortage of 97, 98, 109; Black market 109
Currency 97, 98
Discrimination 109
Dress **90,** 91, **92,** 96, 104
Economy 95, 98; Exports and imports 97-98, 104, 111; Growth 96, 98
Employment and income 92, 97, 98, 104, 109
Farming: Private-plot farming 97, 104, 111; Tobacco 92, 93, 95, 97, 103-104
Flag **95**
Food 93, 97; Meat 97
Government 95; Censorship 110; Communist Party 95, 96, 109; Domestic policy 91, 98, 109-110; Political dissent 110-111
History 91, 93, 95, 96, 100, 106-107
Housing 92, 104; Shortage 104
Labor shortage 98, 104, 109; Women and children workers 98, 103, 104
Language 95, 96, 97
Map 95
Marriage-and-childbearing subsidies 100
Police 109-110
Population 95
Religion 92, 95, 106-107; Churches **100, 101,** 102-103, **106-107;** Monastery **107**
Rural areas 90, 91, 92, **92-93,** 96, 97, **102-103,** 103, 104, 111
Rural-urban migration 91-92, 93, 104
Taxation of single people 98
Timber scarcity 96
Tourism 95, 100; Hotels 109, **109**
Transportation 96, 97, 98; Streetcars **98-99**
U.S.S.R. and 96, 104; Linguistic similarities 96; Trade 96, 98
Western culture 98, 103, 110, 111; Suppression of 98, 103, 110
Bulgarian Orthodox Church 92, 106, 107
Bullfighting: Portugal 810, 814
Bullring: Lisbon, Portugal **811**
Bumbu, Uganda: Church **82-83**
Bunchberry **561**
Bungawuy, Johnny 649, **650,** 663; Family 649, **650-651**
Burch, Richard Lee **444**
Burengo, Mhoja 575, 584, **592**
Burg, Ivan 689
Burial customs: Ancient Bulgarians 114, 123; Burial log, Aboriginal 660, **661;** El Tajín culture (pre-Columbian Mexico) 216, 217, 219; Thracians 125, 127, 129
Burton, Sir Richard Francis: American travel 51
Bush Negroes: Suriname 132; Language 132
Business-association projects: Milwaukee, Wis. 197
Butterfield Stage: Route 47, 48
Butz, A. M. 682

C

Cabanas: Nazaré, Portugal **804-805**
Caetano, Marcello 814
Cairo, Egypt 342-343
Calendar, Sacred Round (Mesoamerican) 220, 221
Calendar stone, Aztec (Stone of the Fifth Sun) 731, **757-758,** 759, 761, 770; Key **759;** Misnomer 731, 759, 761, 770
California: Drought (1976-1977) 169, 174, conservation practices learned 169, 179; Irrigation laws, unenforced 168, protest **168;** Kelp forests *see* Kelp; Postal service, 19th-century 46, 47, 48; Power sources, out-of-state 778, 788, 797, 800; Subsidence 171, **171,** 174, flooding and 174; Water resources: Colorado River 150, 174, 175, 176, groundwater 174
California Academy of Sciences 414
California Public Utilities Commission 779, 781, 800, 803
California Trail 56, 61
Calvert Cliffs, Md.: Nuclear power plant 460; Radioactive-gas leaks (1980) 460
Camel race: Saudi Arabia **306-308,** 309, 314, *cover*
Camels: Saudi Arabia **290-291** *see also* Camel race
Cameroon: Ivory poaching: Confiscated ivory 601-602; Gun-owner-Pygmy deals 601
Çami, Bashkim 546
Camouflage: Rock locust **566**
Camp David accords 340; Saudi Arabia, effect on 330
Campos, Marco Aurelio 493
Canada geese: Chesapeake Bay region 440, **442-443,** 446
Canada–U. S. border *see* Madawaska (region)
Canby, Thomas Y.: ***Our Most Precious Resource: Water.*** Aug., 144-179
Cancer incidence: Chlorine and 166; Oil-refinery areas and 460
Cane, tonkin 507, 510 *see also* Tea stick bamboo
Cannibalism: Aztecs 714, 730, 750; Codex illustration **750**
Canoes: Log canoes **432, 433**
Canyonlands National Park, Utah: Air pollution 782
Capitol Reef National Park, Utah: Strip-mining near, proposed 783
Cardozo, Sady **501**
Caribbean Sea: ***Hurricane!*** By Ben Funk. Sept., 346-379
Carmichael, Hoagy B. **524**
Caron, Minal, family 405
Carpet factory: Albania **547**
Carrillo, Mary Ann 493
Carrillo, Victor 478, 482
Cartoon characters (Guindon) **673**
Carvings: Cross, 1,500-figure **107;** *see also* Wood carvings
Casareal, Ignacio and Manuel 734
Castles: Portugal **828;** *see also* Châteaux; Windsor Castle
Catalina (island), Calif. *see* Santa Catalina
Catalina Marine Science Center, University of Southern California 414
Cathay Mansions, Shanghai, China *see* Jing Jiang Hotel
Catholic Church: Mexico: Feast days **734-735, 743,** 748, 749, 751, Holy Week 738, rites: Aztec culture and 714, 735, 738, 743, 747, 748, 749, 750, 751; *see also* Roman Catholic Church
Cattle; cattle raising: Argentina: Annual production 490, breeds 490, 499, cattle drive **490-491,** foot-and-mouth disease 490, roundup 484-485, 486, **496-497;** Branding of 497, **785;** Veracruz (state), Mexico 205, 213, 226, **226-227**
Cattle breeding: Brahman x zebu 499; King Ranch, Texas 499
Cave art: ***Baja's Murals of Mystery.*** By Harry Crosby. Nov., 692-702
Celts: Gaul 240, 241
Cenozoic Era: Proboscidean evolution: Diagram **583;** Spread of species 582-583, map 582
Centipedes 284, 565
Central African Republic: Ivory trade: Monopoly *see* La Couronne; New-government reforms (1980) 601
Central Arizona Project (water) 173; Construction **176-177**
Central Asia, Soviet (region), U.S.S.R.: Mosques 338, **344;** Muslims 338, 339, 344
Cerro Blanco (mountain), Mexico: Ruins 205, 220
Chaban-Delmas, Jacques 251, 257, 258, 259
Chacmool 769, **770,** 774
Chambers, Lula, and family 201
Chardon, Claude 249
Charles I, King (England) 616; Tomb 625, 629
Charles II, King (England) 629; State bedchamber **623**
Charles VII, King (France) 241
Charles, Prince of Wales 610, **610,** 611, 629, 630-631
Château d'Yquem (Sauternes) 242, 248; Grapes used in **242,** 248
Châteaux (vineyard estates): ***Fine Wines and Fiery Gascons.*** By William Davenport. Aug., 233-259
Cheese, French **253**
Chemical pollution: United States waterways 163, 166; Chesapeake Bay system: Agricultural runoff 446, 452, toxic discharges 439, 441, 446, 449, 453, 456; Oswego, N. Y., cesspool **154-155,** 166; *see also* Pesticides
Chen Guoliang 24
Chen Shu-yu 508
Cheng Tsai-jung 22
Chesapeake Bay Foundation 456, 461
Chesapeake Bay Institute, Johns Hopkins University, Md. 446
Chesapeake Bay system, and regions, Md.-Va.: ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467
Area; dimensions 431, 446; Tidal shoreline 431
Birdlife 431, 446; Waterfowl 431, 439-440, **442-443,** 446, oil-spill casualties (1976) 460
Boating 431, **432, 433, 458-459,** 461
Bridge **434-435;** Length 434
Bridge-Tunnel **428-429;** Length 428
Ecological problems 446, 447 *see also* Pollution, *below*
Ecosystem of Bay 446
Eutrophication 446-447; Sewage nutrients 440, 446, removal of 460
Fish resources 431, 456; Finfish 446, 453, commercial catches 446, decline in 431, 446, number of species 453; Shellfish: Decline in 431, 446, die-offs 448, flooding (1972) 448, *see also* Crabs, Oysters; 21st century, expectations for 447
Future: Geology 467; Pressures 447
Geological history 463
Health of bay *see* Water quality, *below*
Industrial sites 456, 460, **466-467;** Map 439-441; Nuclear power plant 460; Petroleum facilities 460, proposed 460; Pollution control 456, 460
Islands, inhabited *see* Smith Island; Tangier Island
Literary associations 466
Map 439-441 *see also* View from space, *below*
Name, origin and meaning of 431
Oil traffic; oil-handling facilities 439, 447, 460; Proposed refinery 460; Spill (1976) 460
Pollution 439, 446; Agricultural runoff 446, 452; Bay, threat to 439, 440, 460, radioactive water 461; Controls, industrial 456, 460; Oil spills 439, 460; Sewage discharge 440, 446; Shellfish bottoms and 447, 448, 449, 453; Toxic discharges 439, 441, 446, 449, 453, 456; *see also* Eutrophication; Sedimentation
Population, recreation-seeking 434-435, 439; 21st century 439, 447
Problems: Studies of 431, 439, 446, 447, 448, 449, 453, 463, 466, 467; Unknown factors 447, 448, 449, 452, 453

Regional history 431, 432, 445, 454, 461, 466
Salinities 440, 446, 448
Seasons 431, 439-440, 443, 446
Sedimentation; siltation 438, 439, 446, 453, 456, 467; Ecological impact 438, 453; Proposed remedy 438
Shipping **429,** 441, **466-467**
Species, number of 446
Tidewaters 432, 443, 446
Topography 431
Tributaries, number of 431, 439
Vegetation 453; Grass die-off 446, 447, 452, 453
View from space **436-438**
Water quality of bay 446, 447, 456
Watermen 447, 448, **451,** 452-453, 461, **462,** 464
Western shore **444, 445,** 447, **458-459,** 460 *see also* Baltimore; Virginia: Port complex
Wetlands 431, 438, 440; Map 439-441
see also Eastern Shore
Chesapeake Research Consortium 446
Chi Jui-wu 509, 510
Chiang Kai-shek 19, 37
Chicago River, Ill.: Flow reversal 148
Chicontepec region, Mexico: Oil 204, 205, 226
Chilies: Mexican staple **224;** Antiquity of 214, **225**
China, People's Republic of:
Afghanistan border 337
Albania, former relations with 530, 544, 545, 552
Bamboo, the Giant Grass. By Luis Marden. Oct., 502-529
Communism: Effects of 1
History: 20th century 1
Ivory trade 596
Maps of 1; Ethnic map 1
Modernization movement 1
The Peoples of China. July supplement
Shanghai: Born-again Giant. By Mike Edwards. July, 2-43
Cultural Revolution 15, 23, 24, 30, 32, 33, 43, *supplement;* Arts, control of 30; Construction halted 39; Medical progress 31; Religious services suspended 8, 33; *see also* Red Guards, *below*
Ethnic groups *supplement*
Exports and imports 5, 21, **21,** 27
History: Japanese occupation 20, 34; "liberation" 19, 29, 36, 39, 43; Opium Wars 18, 20
Income: Coupons 24; Salaries 24, 33, 36
Medicine: Folk medicine **30-31;** Prosthetic surgery 28-30
Population 34; Growth concerns 32, 33
Red Guards 26-27; Book burning 27, 33; Church destruction 33; Property seizure 39
Religious services resumed **8-9,** 33
Soviet border 26
see also Shanghai, *outlined*
chinampas: Xochimilco, Mexico **724-725,** 738
Chlorine: Carcinogen formation, suspected role in 166; Water purification 152, 166
Choptank (river), Del.-Md.: Oyster research 448, 449
Chou Fengying 21
Christianity: ***Fátima: Beacon for Portugal's Faithful.*** By Jane Vessels. Dec., 832-839; Renouncing of: Albania 533, 553, 554; *see also* Catholic Church
Christians: China **8-9,** 33
Christiansen, Kenneth A. 280
Christoff, Boris 103
Circumcision rites: Aboriginals **644-645, 656-657,** 657, 659, 663
Circuses: Elephant supply 588, **597**
City Creek, Utah: Irrigation use 169
Civil defense: Albanian bunkers 552-553; China: Militia units 26, shelters 26; Evacuation: Hurricane-threatened areas (U. S.) 376, escape routes, inadequate 378, human factor 352, 373, 374-375, 378, time factor 374, 378, "vertical evacuation" 374
Civil disorder: Hurricane aftermath **350,** 351-352, 358
Civil rights protests: Milwaukee, Wis. (1960s, 1970s) 184, 197, 199
Clams, soft-shell: Chesapeake Bay system: Die-off 448
Claret 253; Name origin 241
Clavet, Oneil 397, 400
Clay artifacts: Bulgaria **114, 116,** 117, **118-120**
Clean Air Act (1977) 788
Cleaner shrimp **424-425**
Cleveland, Ohio: Industrial section **156, 157**
Cliff, Charley **44, 59**
Cliff, Gus **44**
Cline, Isaac M. 352
Clock, gilded **616, 618**
Close, Raymond 330
Cloud seeding: Hurricane research 369
Coal reserves: Utah: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
Coal-slurry pipelines (proposed): Utah-Nevada 778, 784, 787, 788
Coal vs. Parklands. By François Leydet. Dec., 776-803
Cody, William F. 45, **58, 70**
Coimbra University, Portugal 825
Colasillo, José **746, 747,** 748
Coles, Joan 784
Collective farm: Alentejo (region), Portugal 825, 827, 830
Colonial America 431, 432, 445, 454, 461; Document **445;** Printing type **445**
Colorado: Water management 169, 172, 179
Colorado River, Mexico-U. S.: Depletion of lower Colorado 148, 174, **176-177,** map 176; Desalination plant (in construction) 174; Diversion of 152, 173-174, aqueducts 150, 173, 174, **176-177,** dams 169, 779, **803,** irrigation 172, 173, 174, 176, map 176; Salinity 174, desalting of 174, sources 174
Colt revolver (1860 Army model) **56-57**
Columbia River, Canada-U. S.: Water projects 150, 175
Comic books: Water awareness taught **169,** 179
Communism: ***Albania, Alone Against the World.*** By Mehmet Biber. Oct., 530-557; ***The Bulgarians.*** By Boyd Gibbons. July, 91-111; ***Shanghai: Born-again Giant.*** By Mike Edwards. July, 2-43
Communist Party: Bulgaria 95, 96, discrimination practiced 109; China: Chairman 37, founding of 34; Portugal 825, coup, thwarted 821, 824, government 814, hospitality tent **813**
Community-group projects: Milwaukee, Wis. 200-201
Compost: ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-280
Composting: Bins 278, **278, 279, 283;** Directions for 273, 278
Computer application: Hurricane monitoring 365, 368, 369
Concepción, Paraguay, and region: Cattle ranch **494-495**
Conch shell: Aztec sculpture of **775**
Conemaugh River, Pa.: Floods 165, 174; Aftermath **164, 165**
Conservation: Forestry: Tree nursery **403;** ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179; Oyster resources 447, 448, 464; Wildlife: Rheas 482, *see also* Elephants; Giant Brazilian otters
Constitution of the United States: Basis of 251
Contla, Alejandro 732
Convention on International Trade in Endangered Species: Ivory imports 601; United States and 585
Cooperatives, agricultural: Albania 545, 551, 555, 557; Bulgaria **111;** St. Paul, Minn. **676**
Copper Age artifacts: Bulgaria 112, 117, **119,** 122-123
Copper mines, ancient: Bulgaria 121, 122
Coppersmiths: Prehistoric Bulgaria 118, 121, 129; Depicted **121**
Cork industry: Portugal 806, 809, 821, 830

Cork trees: Portugal **821,** 827, 830
Corn *see* Maize
Corrientes Province, Argentina: Cattle drive **490-491**
Corriveau, Gedeon, and family 380, 386, 387, 388, 408
Cortés, Hernán 204, 205, 225, 718, 728, 731, 732, 736, 759, 761, 764, 775; Aztec belief about 762; Crypt 764
Cotton fields: California: Salt buildup **172**
Coud, Marcelo de 498
County Stadium, Milwaukee, Wis. **180-181,** 184, 197
Cove Point, Md.: LNG terminal 460; Accident (1979) 460
Cowboys: Mexico 213, **226-227;** *see also* Gauchos
Coyer, James 414, 426
Coyolxauhqui (Aztec deity) 767, 770, 772
Coyolxauhqui stone **766-767,** 767, 769, 772
Coyutla, Mexico 229
Crab Derby (1979): Crisfield, Md. **449**
Crab-picking contest: Crisfield, Md. **430**
Crabbing, commercial: Chesapeake Bay system **451;** Revenue 452; Trotline catching 450, 452, bait 452; Yield decline 452
Crabs, Chesapeake 431, 446, 456; Blue crabs **430,** 440, **448, 449**
Crafts *see* Arts and crafts
Cragwall, Joseph 179
Craig, Colo.: Coalfield near **783,** 791
Crapper, Thomas 162
Creighton, Edward 71
Crété, Jean 248-249
Crisfield, Md.: Crab Derby (1979) **449;** Crab-picking contest, annual **430**
Cronin, L. Eugene 446
Crosby, Harry **693;** ***Baja's Murals of Mystery.*** Nov., 692-702
Cross, J. Parker, Jr. 460
Crown, ceremonial: Bulgarian Orthodox Church **107**
Crystal skull: Aztecs, attributed to **749**
Cuauhtemoc (Aztec ruler) 732, 764
Cuba: Hurricane tracking and research (18th-century) 352, 361
Cuban mercenaries: Middle East nations 285
Cueva Pintada (rock shelter), Baja California, Mexico: Rock art **696-697,** 699
Cultural Revolution, Chinese 1, 15, 24, 30, 32, 33, 43; Arts, control of 30; Book burning 27; Construction halted 39; Medical progress 31; Red Guards 26-27, 33; Religious services suspended 8, 33
Cumming, Alexander 162
Cusack, John, family: Water recycling system **149**
Cutileiro, João 804
Cutout art: Tinwork **469**
Cuyahoga (river), Ohio **156, 157;** Fire (1969) 156, 162
Cyr, Heliodore and Marie 405, **406**
Cyrano de Bergerac 233, 239; Statue of **236**
Cyril, Saint 95, 104; Parade honoring **94-95**
Cyrillic alphabet 95, 96, 104

D

D. Afonso Henriques, Alameda, Lisbon, Portugal: Parade **812**
Dachtera, Ted 1
Daguin, André 239, 240
Dakar, Senegal: Ivory trade, illegal 602
Dakota Indians 674
Dale, Bruce, photographer: ***Shanghai: Born-again Giant.*** July, 2-43
"Muscle and smoke, commerce and crowds." A Shanghai Portfolio. 2-13
D'Alli, Sebastian 378
Dam construction: United States 148, 169, 175; Dam failures, notable 165, 175; Inspection program 165, 175; Number of dams, present 165
Damele, Benny 64
Damele, Peter 64
Damele ranch, Nev.: Barn interior **66-67**
Dams, proposed *see* Dickey-Lincoln School hydroelectric project
Dances; dancing: Aboriginal rituals **648, 658-659,** 663; Argentine gauchos **492,** 499; Cuetzalan, Mexico **708-709**
Dar-el-Hanan School, Jiddah, Saudi Arabia 318, 326; Students **326**
Darwin, Charles 426
Dauphin Island, Ala.: Hurricane damage (1979) 346, **366-367,** 372, **379**
Dávalos, Felipe, artist: ***The Aztecs.*** Dec., 714-751; ***The Building of Tenochtitlan.*** Dec., 753-765
Davenport, Joan 795
Davenport, William: ***Bordeaux: Fine Wines and Fiery Gascons.*** Aug., 233-259
Davis, Norman 376
Day of the Dead: Mexico 749, 751; Talismans **748-749**
Dead, rites for the: Zitlala, Mexico 745, **747;** *see also* Burial customs; Day of the Dead
"Death of a Princess" (film): Controversy 332
DeGuire, Frank **192**
Dehra Dun, India: Forestry research institute 525, 528
Demoiselle (airplane): Bamboo airframe 508
Dental-hygiene schooling **194**
Denver, Colo.: Water-plant construction 169, 179
Desalination plant: Colorado River 174
Desegregation suits: Milwaukee, Wis. 184, 199
Desert landscaping **178**
Deus, João 827, 830
Dhahran, Saudi Arabia 328, **328-329**
Díaz del Castillo, Bernal 718, 745, 750, 753
Dickey-Lincoln School hydroelectric project (proposed): Maine 386, 401, 405; Opposition to 386, 401, 405
Digit-relocation surgery: China 28-30
Dikes: Dredging disposal and 456
Dillon, Douglas **246**
Dimitrov, Georgi **94,** 95, 96, 100; Tomb of 96
Dipirringur (Aboriginal settlement), Australia 646, 650
Dollhouse: ***Royal House for Dolls.*** By David Jeffery. Nov., 632-643
Dolores River, Utah: Salination 174
Dome of the Rock (shrine), Jerusalem **340**
Dominguez, Oscar: Cutout tin artwork by **469**
Dominica (island), West Indies: ***Dominica.*** By Fred Ward. Sept., 357-359
Economics 358
Housing 357
Hurricane damage (1979) **354-356,** 357-358, **358-359,** 361
Independence 358
Political turmoil 358
Dominican Republic: Hurricane damage (1979) **348-349, 353,** 361, 364, 365
Douglas-Hamilton, Iain 567, **575, 592, 603;** photographer: ***Africa's Elephants: Can They Survive?*** Nov., 568-603
Douglas-Hamilton, Oria 567; ***Africa's Elephants: Can They Survive?*** Nov., 568-603
Douglas-Hamilton, Saba **603**
Douro (region), Portugal 815; Winegrowing; wine: Annual production 818, grape pressing **808-809,** 822, 824, vineyards 815, 818, **820-821,** 822
Douro River, Portugal: Bridge **818-819**
Doyle, Robert E.: Elected Vice Chairman of NGS Board of Trustees 427
Draft horses: Albania **556;** Bordeaux (region), France **259;** Brewery wagons 193; Madawaska (region), Canada–U. S. **384, 385**
Drake, Francis 226
Dredging waste: Disposal problems 456
Drought: Africa (1970s) 571, 575, 581, 585, elephants and 571, 572, 575, 581-582, 585, deaths 572, 582; California (1976-1977) 169, 174, conservation practices learned 169, 179

Druzhba, Bulgaria 109
Dube, Alma **400**
Dubs, Adolph: Death 335
Duck soup **727,** 734
Duke, Jack **173**
Duplaix, Nicole **138, 139; *Giant Otters: "Big Water Dogs" in Peril.*** July, 130-142
Dupuy, André 602
Durán, Diego 762
Durepos, Gerard, family **380-381**
Dussauge, Isabel 241
Dynamics of a Hurricane. Sept., 370-371

E

Eagle, harpy: Huastec figurine **216**
Eagles: Aztec symbol **710-711,** 726, 750, **752**
Earle, Sylvia A.: ***Undersea World of a Kelp Forest.*** Sept., 411-426
Earth-resources satellite images *see* Landsat images
Earth-sheltered housing: University of Minnesota 688-689
Earwigs 284
East Bay Municipal Utility District, Calif.: Water-awareness project **169,** 179
Eastern Orthodox Church *see* Bulgarian Orthodox Church
Eastern Shore, Md.–Va. **430,** 431, 435, 440, **442-443,** 447, 448, **449;** Estates **454-455**
Echo Canyon, Utah: Pony Express relay station site **52-53**
Ecosystems: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566; ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426; ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
Edison, Thomas 522, 528
Edmundston, Canada: Folk festival **398-399,** 400; Pulp mill 386, 395, **402-403**
Edward III, King (England) 625, 628
Edward IV, King (England) 628
Edward VII, King (Great Britain) 615, 631
Edward VIII, King (Great Britain): Abdication 629
Edward, Prince of Wales (Black Prince) 241
Edwards, Mike: ***Shanghai: Born-again Giant.*** July, 15-43
Egan, Howard **56,** 64
Egan, Richard Erastus "Ras" **59,** 64
Eggs: Water used in production 144
Egyptian-Israeli treaty 342, 343
Eighty Centuries of Veracruz. By S. Jeffrey K. Wilkerson. Aug., 203-231
Eleanor of Aquitaine 239, 241, 253
Electricity: Hydroelectric generator, thousand-watt **175**
Elephant, Asian *(Elephas maximus):* Evolution of: Diagram depicting **583;** Range (map) 582
Elephant fence: South Africa 591
Elephant survey: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
Elephants, African *(Loxodonta):* ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
Behavioral studies of: Douglas-Hamilton 571, 575, **575,** 581-584, 588, 590; Martin 590
Calves: Learning 581; Nursing **572-573,** 575, 592; Tending of 575, 582, **593**
Clan 590
Coexistence, elephant and man 602, 603
Communication 590
Conservation programs: Elephant fence, herd recovery and 591; Indifference to, mass 571, 594, 603; Ivory-trade bans; import limitations 585, 594, 598, 601; Safest refuge 591; World Wildlife Fund 578; *see also* Wildlife management
Culling of 585, 588-590, 594; Habitat accommodation and 578, 585, 588, 590, 597; Objections to 590; Utilization of culled 588-590, **596-597**
Desert elephants 591, 602-603
Disease 582, 588
Distribution (map) 578-579
Dominance order 575; Calves 575
Drought hardships 571, 572, 575, 581-582, 585
Evolutionary history 582; Diagram depicting **583**
Family units **568-569,** 571, 573, 575, 581, **588-589;** Matriarchs **569,** 575, 581, 582-584
Feeding habits, destructive 571, **574,** 581, 594, 601, 602
Females: Social structure 573, 575, 592
Food consumption, daily 601
Forest subspecies *(Loxodonta africana cyclotis)* 591, 594; Hunting 591, 594; Safety of, comparative 591
Gestation period 573
Ivory-trade slaughter of *see* Slaughter, *below*
Juveniles: Females 575, 592, **593;** Males 573, 575
Kinship groups 588, 590
"Last-rites" behavior **588-589**
Learning 575, 581
Males: Social structure 573, 575, 581
Matriarchs *see* Family units, *above*
Number surviving *see* Distribution, *above*
Range and habitat 596; Loss of 568, 571, 578, 601; Maps 578-579, 582; *see also* Desert subspecies, *above*
Reproduction 572-573
Skin, properties of 594, **595**
Slaughter of **570,** 571; Crop raiders killed 588, 591, 594, 601; Ivory-trade poaching 571, 575, 578, 580, **580-581,** 584, 585, 594, 596, 601; *see also* Culling, *above;* War casualties, *below*
Social structure 590; *see also* Clan; Family units; Kinship groups, *above*
Solicitous behavior 575, 582, **592, 593**
Temperature regulating, ears and 594
Threatened species 578, 585; Decline continuing 571, 596, 603; Survival, chances for 571, 603
Trunk, dexterous 575, 581, **586,** 587, **587, 593**
Twins **572-573,** 575, 581-582
War casualties: Rhodesian minefields 590; Tanzanian and Ugandan soldiers' slaughter of 578, 584
El Gordo (gaucho) 499
Elias, Freddy 34, 36
Eliot, John: ***Into the Eye of David*** (1979 hurricane). Sept., 368-369
Elizabeth I, Queen (England) 614
Elizabeth II, Queen (Great Britain): ***Windsor Castle.*** By Anthony Holden. Nov., 604-631
Elizabeth River, Va.: Proposed oil-refinery site 460
Elk kelp *(Pelagophycus porra)* 414, **414,** 419, 426; Distribution 414
El Tajín (pre-Columbian metropolis), Mexico: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffery K. Wilkerson. Aug., 203-231
Abandonment of 220
Architecture **206-211,** 211, 216
Artwork 210-211, 216; Reproduced **222-223;** *see also* Architecture, *above;* Sculpture, *below*
Ball courts **207, 208,** 209, 216, 219; Artwork (reproduced) **222-223**
Excavation of 204, 213
Habitation 214, 216; Dates 203, 204, 220; Ethnic stock 203, 205, 216; Origins 213-214
Influence 214, 217
Maize cultivation 209
Name meaning 220
Pictographs **221;** Reproductions of **220-223**
Pyramids **202, 206-211,** *cover*
Religion: Ball game ritual 209, 216, 219, 222, depicted **222-223;** Deities 216-217, 219-220, 222, **222, 223;** Pulque ritual 219-220, 222, depicted **222-223**
Rulers 216, 217, 220, 221
Sculpture, relief 216, 220, **221;** Depicted **220-221, 222**
Temples **206-211,** 209, 216, 222,

cover
El Zapotal (archaeological site), Mexico: Finds 205
Empty Quarter (desert), Saudi Arabia *see* Rub al-Khali
Endangered and threatened species: Fishes 788; *see also* Elephants, African; Giant Brazilian otters
Energy: Power equivalents: Hurricane heat energy 350
Energy conservation: Minneapolis and St. Paul 679, 682, 688-689
Energy resources *see* Coal reserves; Oil; Tar sands
England: Hundred Years' War (England *vs.* France) 235, 239, 241; *see also* Windsor Castle
Environmental Defense Fund 788, 797, 803
Environmental Protection Agency (EPA) 782, 784, 788
Environmentalists: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803; Hydroelectric project (Maine), oppose 386, 401, 405; Natural-gas pipeline placement and 460; Oil-refinery construction lawsuits 460; Waste-disposal controversy: Harbor dredging 456; Water-plant construction 169
Eppel, David 341
Erie, Lake, Canada-U. S.: Cleanup 151; Eutrophication 162-163
Erosion: Land clearing and 438, 453; Lichens' role in 566; River sedimentation and 438, 446, 453; Water erosion: Chesapeake Bay islands and shoreline 463, 467, acreage lost 466, 467, island footage lost annually 466, island lost 466-467
Erosion-control studies **167**
Escalante, Utah 784; Coal development, proposed 783, 784
Escarpit, Robert 236
Espejel Pérez, Mario Alberto 717-718
Estancia Aguay, Argentina 478, 493
Estancia La Margarita, Argentina **488-489**
Estancia Los Manantiales, Paraguay: Cattle drive **498-499;** *vaqueros* **494**
Estancia Villa Santa, Paraguay: Bunkhouse **494-495;** *vaqueros* **495**
Estremoz, Portugal **823**
Ethnic maps *see below*
Ethnology: ***The Peoples of China.*** July supplement; ***Two Centuries of Conflict in the Middle East; Mideast in Turmoil.*** Sept. supplement; *see also* Aboriginals; Baganda; Indians of North America
Eugénie, Empress (France): Windsor Castle visits 615, 623
Europe *see* Albania; Bordeaux (region), France; Bulgaria; Portugal
European Common Market: Portuguese membership, impending 818, 827
Eutrophication 162-163; Chesapeake Bay system 446-447; Nutrients 153, 163, removal of 460, sewage 440, 446
Evans, Annette 200
Evans, Howard Ensign 280-281
Evolution: Proboscidea: Diagram **583,** spread of species 582-583, map 582; Survival of species: Theories 849, "kin selection" 846, 849
Évora, Portugal: Coat of arms 825
Ewell, Md. 461; Watermen **462**
Extinction of species: Proboscidea 583; Types extinct **583**
Exxon: Uranium prospecting 786

F

Fado 810, 814, 830
Fahd, Crown Prince (Saudi Arabia) 304-305, 314, 321, 322, 323, **323**
Fairhurst, Charles 688
Faisal, King (Saudi Arabia) 297, 301, 318, 319, 322, 327, 332; Assassination 304, 324
Faisal Saffooq al-Bashir 286, 332
Falcons: Saudi Arabia 314, **321**
Falk, Herman W. 198
Family planning: China 32, 33
Faraj (Saudi Arabian) 314-315
Farmers' cooperative: St. Paul, Minn. **676**
Farmers Home Administration: Water-system assistance 156
Farmington, N. Mex.: Strip mining 791; Land, restoring of **782-783,** 791
Farmland, loss of: Irrigation costs 159, 160, 172; Salt buildup 172, 174
Fátima, Portugal: ***Fátima: Beacon for Portugal's Faithful.*** By Jane Vessels. Dec., 832-839
Ferrell, John 791, 796
Fertilizer: Water pollution and 163, 166
Festivals *see* Foire Brayonne; Summerfest; Winter Carnival; Winterfest
Fiftymile Mountain, Utah 782, **786-787**
Fighters Against Fascism (early Bulgarian communists) 109
Findley, Rowe: ***The Pony Express.*** July, 45-71
Finiq, Albania: Cooperative farm 545
Fir, balsam **560, 562**
Fire-eater: France **476-477**
Firearms: Elephant poaching, types used in 571, 601, 603, automatic 571, 578, 584, 594; Punt guns 461, 464
Fires: Bushfires: Australia **652-653,** 657, 659
Firewood harvesting: Madawaska (region), Canada–U. S. **385,** 394, 395
Fisher, Allan C., Jr.: ***My Chesapeake—Queen of Bays.*** Oct., 428-467
Fishes: Acid rain, effects of 160, 168; California waters: ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426; Endangered species 788; Herbivorous 416, 418-419; ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467; *pataka* **133,** 136, 142
Fishing ban: James River, Va. 453
Fishing industry: ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467; Portugal 806, 809, 825, **826-827**
Fishing rods, split-bamboo 504, 507, 510; Cross section **525;** Manufacture **506-507,** 510, **524, 525**
Flea markets: Chesapeake Bay region **456-457**
Fleece-covered saddles: Gauchos 482, **482,** 486, **494**
***Flight of the* Kitty Hawk** (balloon). By Maxie and Kristian Anderson. Aug., 260-271
Flint artifacts: Bulgaria 112, 117, **119**
"floating gardens": Xochimilco, Mexico **724-725,** 738
Flood control: United States 165, 174-175
Flood Control Act (1936) 174
Flood plains **162-163;** Management of, proposed 174-175; Use of 162-163, 174
Floods; flooding: California 174; Chesapeake Bay system and 448; Damage and deaths (United States) **164, 165,** 174, 175; Johnstown, Pa. 165, 174, damage **164, 165**
Flores, Pedro 738
Florida: ***Hurricane!*** By Ben Funk. Sept., 346-379
Flower vending **200-201**
Foire Brayonne (festival): Edmundston, Canada **398-399,** 400
Folk art: Madawaska (region), Canada–U. S. **392, 393,** 394
Folk festivals: Acadian Festival Week 394; *see also* Foire Brayonne
Folk medicine: Animal-based: China **30, 31;** Bamboo 515-516
Follmer, Diane **683**
Food chain: Algae 416, 418, 419, 426, 559
Football camp, boys' **690-691**
Forestry: Tree nursery **403**
Forestry institute: Dehra Dun, India 525, 528
Forests; forest products *see* Firewood harvesting; *and* Fraser Inc.
Forests, primary: Africa: Lumbering 601; Rare species threatened 601
Fort Baker, Calif.: *Kitty Hawk*

(balloon) launch site 263, **265**
Fort Kearny, Nebr.: Pony Express relay station 56, 57
Fort Kent, Maine 394, 405; Border crossing 386, **388-389**
Fort Laramie, Nebraska Territory: Pony Express relay station 57, 61, 63
Fort Laramie National Historic Site, Wyo. 61, **62-63**
Fort Snelling Reservation, Minn. 667; History reenacted **670**
Four-in-hand (vehicle): **613, 627,** 629, *cover*
Fourth of July celebration: Milwaukee, Wis. 189, **190-191,** 195
France: Ivory trade: Porno 602; *see also* Bordeaux (region); Paris
Frank, Neil 372, 373, 374-375, **375,** 378
Fraser, Donald 395
Fraser, Donald M. 678-679
Fraser Inc., Edmundston, Canada: Employment 386, 387; Lumbering camp 395, 397; Paper mill (Madawaska, Maine) 386, 387, 395, **403;** Pulp mill 386, 395, **402-403;** Pulp pipeline: Canada-U. S. 386, 395, 403; Timberland managed and harvested, size of 395; Tree nursery **403**
Fraser School, Minneapolis, Minn. **679**
Fred Usinger, Inc., Milwaukee, Wis. 195, **196**
Freddie, King (Edward Frederick Mutesa II, King of Buganda) 79, 83, 84, 86
French settlements: Canada 385, 388, 394; Veracruz (state), Mexico 205, 226, 227
Fresno, Calif.: Irrigation-law protest **168**
Fruit fly **282**
Fry, Arthur 688
Fry, Johnny **44, 46**
Fudan University, Shanghai, China 24, 26
Fungi 273, **276, 277;** Algae and 565
Funk, Ben: ***Hurricane!*** Sept., 346-379
Fur hunting: Giant Brazilian otters 131-132
Fur Seal Treaty of 1911 131

G

Gabon: Elephants 591, 594; Hunting of 591, 594; Number of 579; Population stable 594
Galeano, Fernando **497**
Galey, André 236, **237**
Galveston Island, Texas: Hurricane (1900) 352, 361
Gamble, James 71
Gang of Four regime (China) 24, 30, 33, 39; Executions during 32; Overthrow of 32
García Payón, José 204, 213
Garfinkel, Perry: ***Madawaska: Down East With a French Accent.*** Sept., 380-409
Garibaldi (fish) **419,** 422
Garrett, Wilbur E.: Elected Editor of NATIONAL GEOGRAPHIC 427, 567
Garrison, Everett 525
Garter, Most Noble Order of the 606; Founding 625, 628; Installation procession 628, **630-631;** Motto 628
Gascons: ***Bordeaux: Fine Wines and Fiery Gascons.*** By William Davenport. Aug., 233-259
Gascony (region), Middle Ages 236
Gaspar, Simón **487**
gauchas (horsewomen) 493
The Gauchos, Last of a Breed. By Robert Laxalt Oct., 478-501
Ancestry 478, 482, 498
Cattle drive **490-491, 498-499**
Cattle roundup 484-485, 486, **496-497**
Common-law marriage 493, 497
Distribution of: Map 482
Dress 482, 484, 496, 500, **501;** Leather apron **479, 484, 495-497;** Trousers **479, 485, 492**
Drink, traditional 478, 490, 491, 501
facón (knife) 482, **482,** 486, 490; Duels 491
History 478, 482, 484, 493, 496-497, 498, 499-500
Horsemanship 478, 482, 485
Lassos 482, **482, 483,** 486
Literary associations 497
Name origin 482, other names for 493
Recreation 490, **492, 494, 495,** 499 *see also* Rodeos, *below*
Rodeos 478, **483-485**
Saddle; saddle gear 482, **482,** 486, 493, **494-495**
Working equipment *see facón; Lassos, above; and* Bolas
Gauri, K. Lal 160
GAZ 51 (Soviet-built truck) 91, 96, 103
Geese, domestic: Adoulins, France 236; Force-fed goose **237**
Geese, wild *see* Canada geese
Gelassi (Bulgarian bishop) **107**
"General History of the Things of New Spain" (Sahagún compilation) 718, 730, 732, 750, 772, 774
General store: Ewell, Md. **462**
Generator, hydroelectric: Home electricity **175**
Genetic survival (theory) 846, 849
George III, King (Great Britain) 614, 630
George IV, King (Great Britain) 614, 616; Death chamber 615; Windsor Castle remodeling 615, 616, 621
George V, King (Great Britain): 615, 629; Portrait, miniature **639**
George VI, King (Great Britain) 610, 614, 628, 629
Georges Pompidou National Center of Art and Culture: ***Pompidou Center, Rage of Paris.*** By Marc Riboud. Oct., 469-477
Georgia, Lowell, photographer: ***My Chesapeake—Queen of Bays.*** Oct., 428-467
Georgia: Dam failure 175
Georgiev, Georgi I. 114, 117, 118
Gerlach, Talitha 36
German-Americans: Milwaukee, Wis. 191, 195; Settlement history 185, 187, 193
Ghawar oil field, Saudi Arabia 319
Ghazi Algosaibi 296
Ghegs 553; Traditional costume **553**
Ghosh, R. C. 525, 528
Giant bamboo **520-521,** 525
Giant Brazilian otters (*Pteronura brasiliensis*): ***Giant Otters: "Big Water Dogs" in Peril.*** By Nicole Duplaix. July, 130-142
Cubbing 139, 142
Cubs **135,** 136, 138, 139, 142
Dens 139, **139,** 142
Diet **132, 133,** 134, 136, 142
Endangered species 131, 135, 142
Family structure 139, 142
Habitat, loss of 137, 142
Hunting of 131-132
Mating 139
Protection of (Suriname) 132, 135, 142
Range and habitat 131-132; Map 135
Size 131, 135
Territory: Campsites 134, 135, 138, **140;** Marking 132, 134, 141, 142; Size 131, 138
Vocalizations 130, 132, 135, 136, 139, 141, 142
Giant kelp (*Macrocystis pyrifera*): ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426
Gibbons, Boyd: ***The Bulgarians.*** July, 91-111
Gibson, Nancy 691
Giddings, Al, photographer: ***Undersea World of a Kelp Forest.*** Sept., 411-426
Gillette, Wyo.: Urban-growth problem 784
Gironde (department), France *see* Bordeaux (region)
Gjirokastër, Albania **536,** 553, 554
Glen Canyon Dam, Ariz. 775, 785, **803**
Glen Canyon National Recreation Area, Ariz.–Utah: Tar sands underlie 783
Gliders, 19th-century: Bamboo airframes 508
Gloucester Point, Va.: Virginia Institute of Marine Science 449
Glyphs, Aztec 726, 735, **757-758,** 759
Goats: Portugal **823;** Sacrificial goat: Zitlala, Mexico **746**
Gold ingots: Spanish treasure 225; Assayer's symbol **214,** 225
Gold mines: Thrace 129
Gold objects: ***Ancient Bulgaria's Golden Treasures.*** By Colin Ren-

frew. July, 112-129; 15th-and-16th-century jewelry, Mexican **215,** 220, 225; Watch, antique gold **39**
Golden bamboo **520**
Golden Gate Bridge, San Francisco, Calif. **264**
Golden jackals: ***Jackals of the Serengeti.*** By Patricia D. Moehlman. Dec., 840-850
Dens: Flooding 849
Diet 849, 850
Family structure 849, 850; Helpers 849, 850
Greetings 850
Habitat 843, 849
Monogamous relationship 850
Predation of young 848, **848-849**
Range 843
Scavenging **850**
Size 843
Territory, defense of **848-849,** 850
Weight 848
Whelping season 844
Goldsborough, Bill 461
Goldsborough Creek, Md. **450-451;** Crabbing **451,** 452
Goldwork: **Ancient Bulgaria's Golden Treasures.** By Colin Renfrew. July, 112-129
González Pineda, Marco A. 731
Gorna Sushitsa, Bulgaria: ***The Bulgarians.*** By Boyd Gibbons. July, 91-111
Got, Armand 233, 249
The Gourma (region), Africa: Elephants 602-603; Man and elephant coexistence 602, 603
Grain commerce: Minneapolis and St. Paul region **676;** History 667, 674
Grain Exchange, Minneapolis, Minn. **676**
Grand Banks, Atlantic Ocean: Portuguese fishermen 825
Grand Canyon, Ariz. 779, 794; Dam construction cancelled 799
Grand Forks, N. Dak., area: Floodplain **162-163**
The Grandeur of Windsor. By Anthony Holden. Nov., 604-631
Grape culture: Bordeaux (region), France: Grape mold, beneficial **242,** 248; Harvest **240, 242,** 248; Varieties cultivated **233,** 240, 248, antiquity of 233, 240, cloning 242; Vines, average age of 249
Grape treading: Portugal **808-809,** 822, 824
Grasses *see* Bamboo; Grasses, aquatic
Grasses, aquatic: Chesapeake Bay system: Die-off 446, 447, 452, 453, Baltimore harbor recovery 456
Grasslands: South America 482, 484, **488-491,** 500; Map 482; Threat to 500
Graves, William: ***After an Empire . . . Portugal.*** Dec., 804-831
Graves (wine district), France 238
Great Lakes, Canada–U. S.: Pollution 162, 166; Cleanup efforts 151, 166
Great Temple of Tenochtitlan: ***The Aztecs.*** Dec., 704-775: I. ***The Aztecs.*** By Bart McDowell. 714-751; II. ***The Building of Tenochtitlan.*** By Augusto F. Molina Montes. 753-765; III. ***New Finds in the Great Temple.*** By Eduardo Matos Moctezuma. 767-775; IV. ***Visitor's Guide to the Aztec World*** (supplement)
Additions 768, **768-769,** 774
Age 775
Artifacts **772-773,** 773-774
Cutaway diagram **769**
Dedication 727, 732, 773
Discovery (1978) 717-718, 767
Excavation 767, 770, **771,** 773, **774, 775;** Diagram **768-769**
Human sacrifice 727, 772, 774
Painting of **754-756**
Sculpture **766-767,** 769, **770,** 772, **772-773,** 774, **775**
Shrines **755,** 768, 770, 774; Diagram **768**
Size 768
Greek Orthodox Church: Uganda 75, 83; Bishop 76, **82**
Green striped bamboo **520**
Greenhouses: Pazardzhik, Bulgaria **110-111**
Griffiths, Annie, photographer: ***Minneapolis and St. Paul.*** Nov., 665-691
Grit and Glory: The Pony Express. By Rowe Findley. July, 45-71
Groppi, James 199-200
Groppi, Peg Rozga 200
Grosvenor, Gilbert M.: Elected President of National Geographic Society 427, 567
Groundwater: ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179
Guangdong (Kwangtung) Province, China: Bamboo 508, 509, 510
Güemes, Martín Miguel de 497
Guerra, Gina 810, 814
Guerrero (state), Mexico: Indians 745, **747;** Rain-making ceremony 743, **743,** 748-749, 750, costumes **742, 743**
Guerrilla, Afghan **337**
Guindon, Richard **673**
Güiraldes, Juan José 496, 497
Güiraldes, Ricardo 497
Guizard, Pierre 591
Gulf Coast, U. S.: ***Hurricane!*** By Ben Funk. Sept., 346-379
Gulf Oil Corporation: Grants: NGS television 703
Gulf Shores (vacation colony), Ala. **377;** Hurricane damage (1979) 372, **376-377**
Gurda, John and Sonja 194
Guthrie, Sir Tyrone 677
Gutiérrez Zamora, Mexico 205, 213, 226
Guyandotte River, W. Va. 152
Gwasaze, J. C. **80**
Gwin, William M. 47

H

Hafar al-Batin, Saudi Arabia 330
Hairy bamboo 510, 511; Variant 516, **517, 521**
Haiti: Hurricanes 352-353, 364
Hajj **309-311, 313,** 343; Iranian politicizing of 286, 296, 313, **313**
Hajj terminal (airport): Jiddah, Saudi Arabia 296, **298**
Halbert, Sherrill 65, 66, 67
Hambleton, Enrique **693**
Hamilton, Sam 66, **70**
Hamilton, W. D. 849
Hampton Roads Energy Company: Virginia: Proposed oil refinery 460
Han Guo-qing 26-27, **27**
Han Xiaomei 26, 27
Haram (mosque), Mecca, Saudi Arabia: Occupation of 297, 298
Harpy eagle: Figurine, Huastec **216**
Harr, Mauritania 602
Harry Allen power plant, proposed: Nevada *see* Allen-Warner Valley Energy System
Harvestman **563-564;** Prey-capture method 563
Haslam, "Pony Bob" 64-65
Hat, bamboo **527**
Hattenberger, Lee **145**
Haut-Brion, Château, Bordeaux (region), France **242, 246,** 247; Wine 242, **242,** 246, 247
Haven, Dexter S. 449
Hawk, red-tailed **562**
Hawkins, John 225
Hawthorne School, Oakland, Calif.: Water-conservation class **169**
Hegira 314
Heinle, Don 453
Henderson, Paul 59
Henry II, King (England) 239, 241, 253, 606
Henry III, King (England) 606
Henry VIII, King (England): Armor 615; Tomb 625, 628
Henry II, King (France) 256
Henry the Navigator, Prince 830; School founded by 807, 830, site **807**
Herbst, Bob 795, 796
Herebio, Ramón **494**
Here's to Milwaukee. By Louise Levathes. Aug., 180-201
Hernández, José 497
Hernández Ochoa, Rafael 228-229, 231
Herodotus (historian): Thracians, account of 125
Herring, Carl 159
Hetch Hetchy Valley, Calif.: Dam 169
Hickok, James Butler "Wild Bill" 45, 56
Hietala, Gary **683**
High Plains (region), U. S.: Canal, proposed 159; Groundwater de-

pletion 158-159
Himalayas (mountains), Asia: Bamboo **514**
Hindu Kush (mountain range), Asia 335, **336-337**
Hinojosa, Héctor 714
Hippopotamuses **84-85,** 88
Hiser, David, photographer: ***The Aztecs.*** Dec., 714-751; ***Man's Eighty Centuries in Veracruz.*** Aug., 203-231; ***New Finds in the Great Temple.*** Dec., 767-775
Hisham Nazer, Sheikh 319
Hispanics: Milwaukee, Wis. 185, 191
History, U. S.: ***The Pony Express.*** By Rowe Findley. July, 45-71
Hmong tribesman: Thailand **522**
Hoffman, Freddie 372
Holden, Anthony: ***Windsor Castle.*** Nov., 604-631
Hollenberg Ranch, Hanover, Kans. 52; Pony Express relay station **48,** 52
Holy Week ceremonies: Huejutla, Mexico 738
Honeywell Inc., Minneapolis, Minn. 682
Hong Kong: Bamboo uses **509, 511-513;** Ivory trade 594, 596; Shanghai refugees 36
Honychurch, Lennox 358
Hopewell, Va.: Chemical plant: Kepone affair 453
Horcasitas, Fernando 745
Horn Point Environmental Laboratories, Md.: Experimental projects 449, 453
Horse breeding: Criollo x quarter horse 499
Horse-drawn vehicles 193, **259, 385, 556, 613, 627,** 629, Nov. cover
Horse show: Windsor Castle, England 630; Closing ceremony **604-605**
Horse training: Gaucho method 486
Horsemanship: Gauchos 478, 482, 485
Horses: Criollo 484, 497, 499; Quarter horse 499; *see also* Draft horses
Horsewomen: *gauchas* 493
Hospitals: China 28-29; Uganda 76, 77, **80**
Hostel, youth: Sagres Point, Portugal **807**
Housing, mud and clay: Adobe **316-317, 487;** Mud **86-87;** Wattle-and-mud: Prehistoric Bulgaria 114, 118, **122-123**
Housing, subterranean 688-689
Howe, Jim 674
Howell, William **193**
Hoxha, Enver: ***Albania, Alone Against the World.*** By Mehmet Biber. Oct., 530-557
Hsiung, W. Y. 510, 511, 515
Hua Guofeng 37
Huaiji (Waitsap), China 507, 508, 509
Huangpu River, China: Shipping **10-11,** 21
Huastec Indians: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231
Hubert H. Humphrey Stadium, Minneapolis, Minn.: Controversy 678
Huejutla, Mexico: Holy Week ceremonies 738; Market 745
Huens, Jean-Leon, artist: ***Ancient Bulgaria's Golden Treasures.*** July, 112-129
Huitzilopochtli (Aztec deity) 722-723, 726, **763;** Legends 722-723, 726, 767, 770, 772; Shrine to 770, 774, diagram **768**
Hulten, Pontus 473, 477
Human sacrifice: ***The Aztecs.*** Dec., 704-775
Hummingbird, ruby-throated **560**
Humphrey, Muriel B. **679**
Hundred Years' War (1337-1453) 233, 235, 239, 241
Hunting: Elephants *see* Poaching; Giant Brazilian otter 131-132; Hippopotamuses 88; Waterfowl hunting: Punt guns and 461, 464
Hurricane Allen (1980) 346, 352, 353, 361
Hurricane Beulah (1967) 378
Hurricane Camille (1969) 352, 361, 376
Hurricane David (1979): ***Hurricane!*** By Ben Funk. Sept., 346-379
Dominica. By Fred Ward. 357-359
Into the Eye of David. By John L. Eliot. 368-369
Hurricane Flora (1963): Haiti 352-353
Hurricane Frederic (1979): ***Hurricane!*** By Ben Funk. Sept., 346-379
Hurricanes: ***Hurricane!*** By Ben Funk. Sept., 346-379
Dominica. By Fred Ward. 357-359
Dynamics of a Hurricane. 370-371
Into the Eye of David. By John L. Eliot. 368-369
Paths of Fury—This Century's Worst American Storms. 360-361
Benefits of 371, 379
Civil disorder following **350,** 351, 352, 358
Classification system 352, 371 *see also* Wind-speed classification, *below*
Costs 352, 353, 361, 365, 373, 375
Death toll: 20th century 352, 361
Destructive power (tons of force) 378
Diameter 346, 357, 363, 371
Energy: Power equivalent 350
Evacuation of threatened areas *see* Civil defense
Mechanics of 353, 363, 364-365, 368-369, 371, 372; Diagrams **370-371;** *see also* Storm surges, *below*
Monitoring; tracking 346, 352, 353, 361, 365, 368-369
Season, hurricane 353, 371
Spawning areas 353, 371
Statistics *see* Costs; Death toll, *above*
Storm surges 352, 357, 361, 367, 372, 374, 376, 378, 379
20th century's worst storms 346, 352, 361; Paths of (map) 360-361
Wind-speed classification 363, 371
Hydroelectric power: United States 150, 151; Development of 175
Hydroelectric project, proposed: Maine *see* Dickey-Lincoln School
Hydrologic cycle 143, 148; Water purification 168
"hydromite" (generator) **175**
Hyenas: Jackals, attacked by **848-849,** 849
Hyman, David 216

I

Ibn Saud, King (Saudi Arabia) *see* Abdulaziz, King
Ice Age mammals *see* Pleistocene Epoch
Iffat, Queen (Saudi Arabia) 318
Illyria (ancient kingdom) 539, 553
Imagery, satellite: Earth-resources satellite (Landsat): Chesapeake Bay, and regions, Md.-Va. **436-438;** Weather satellites: Hurricane tracking **369**
Imam Husain: Shrine of **345**
Immigrants: 1800s: Madawaska (region), Canada–U. S. 385, 394, 401, 406; Mexico 205, 213, 226; United States 52, 185, 187, 192, 667
Imperial Valley, Calif.: Irrigation 169, 174
India: Bamboo 522, 525, 528
Indian wars: United States 45, 61, 64-65, 70, 71
Indians of North America: American Indian Movement (AIM) 675; ***Baja's Murals of Mystery.*** By Harry Crosby. Nov., 692-702; Coal and uranium assets 675; Cultural heritage preservation 674-675, 677; Irrigation 169; ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231; Water rights 173; *see also* Aztecs; Indian wars
Industry: Water conservation: Recycling 179, 460; Water pollution: Controls 456, 460, toxic discharges 439, 441, 446, 453, 456, *see also* Black Lagoon
Infrared images: Chesapeake Bay system, and regions, Md.-Va. **436-438;** Santa Luisa (archae-

ological site), Mexico 217, **218-219**
Inner tubers: Winterfest, Minneapolis, Minn. **680-681**
Insects: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566; ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
International 500 Snowmobile Race: Winter Carnival, St. Paul, Minn. 690
International Union for Conservation of Nature: Study grants 578, 584
International Workingmen's Association: Milwaukee, Wis., branch 197
Into the Eye of David (hurricane). By John L. Eliot. Sept., 368-369
Investors Diversified Services building, Minneapolis, Minn. **664,** 666; Crystal Court **673,** 689
Iran: Social breakdown 297
Iranian pilgrims: Hajj: Politicizing of 286, 296, 313, **313**
Irrigation: Cost, fallow farmland and 159, 160, **172-173;** Groundwater depletion 158-159, 171
Irrigation systems: First Anglo-Saxon people to use *see* Mormons, *below;* Mormons 169; Pre-Columbian 169, Aztecs 735, *see also* Santa Luisa
Ishmael (Islamic patriarch) 314
Islam 338, 343; Albania: Renouncing of (1443-1478; 1967-) 533, 553, Turkish rule and 532; European inroads 532; Power of 285; ***Saudi Arabia: The Kingdom and Its Power.*** By Robert Azzi. Sept., 286-333; Shrines **344, 345** *see also* Mecca; ***Two Centuries of Conflict in the Middle East; Mideast in Turmoil.*** Sept. supplement
Islam's Heartland, Up in Arms. By Thomas J. Abercrombie. Sept., 335-345
Islands, buildup of: Dredging disposal and 456
Isothermic map: Groundwater: United States 150-151
Israel 341-342; Embassy in Cairo, opening of 342; Settlement controversy 335, 341, Sept. supplement
Israeli-Arab conflict *see* Arab-Israeli conflict
Italian community: Milwaukee, Wis. 185, 191
Italian settlements: Veracruz (state), Mexico 205, 213, 226
Ituzaingó, Argentina 478; Dance club **492**
Ivanov, Ivan S. 114, 123
Ivanov, Raicho **99**
Ivory Coast: Forest decimation 601; Elephant range and 601
Ivory trade, African: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
Iwashimizu Hachiman (Shinto shrine), Kyoto, Japan 522
Ixtapan, Mexico: Salt makers 734

J

Jabiru, Australia: Uranium mining 651
Jackals: ***Jackals of the Serengeti.*** By Patricia D. Moehlman. Dec., 840-850
Family structure 841, 844, 849, 850; Helpers 842, 846, **846, 847,** 849, 850, correlation to pup survival 846, 849, 850
Monogamous relationships 841, 844, 850
Predation of young 848, **848-849,** 849
Predatory nature 840, 841
Scavenging 840-841, 842, **844, 850**
Territory: Defense of **844-845,** 846, **848-849,** 850; Size 844, 846
see also Golden jackals, *outlined;* Silver-backed jackals, *outlined*
Jade, serpentine: Aztec figurine **773**
Jade beads **224**
Jaguar fights (rain-making ceremony): Guerrero State, Mexico 743, **743,** 748-749, 750; Costumes **742, 743,** 749
Jaguars: Aztec symbol **704, 710,** 718, **719**
Jalapa, Mexico 204, 205, 229
James, Fob 372
James River, Va.: Kepone dumping 453, 456, years required to eliminate 453; Oyster beds 460, spat, decline in 449; Sedimentation 438
Jamestown, Va.: Settlement of 431
Japan: Algae import 727; ***Bamboo, the Giant Grass.*** By Luis Marden. Oct., 502-529; Ivory trade 584, 596
Jawhara al-Ankari 318
Jeffery, David: ***The Grandeur of Windsor.*** Nov., 616-625; ***Royal House for Dolls.*** Nov., 632-643
Jensen, William "Pete" 453
Jerusalem, Israel **340-341,** 341-342; Peace demonstration **335**
Jewelry, gold: 15th- and 16th-century Mexican **215,** 220, 225; Prehistoric Bulgarian 112, **114,** 123
Jewish settlements: Israeli-occupied territories, Sept. supplement; Israeli Government policy 335, 341; Jordan Valley settlements 341; West Bank settlements 335, 341
Jiang Qing 30
Jicaltepec, Mexico 205, 226
Jiddah, Saudi Arabia 344; Airport 296, **298, 299;** Girls' school 318, students **326;** Stores 315, **330-331**
Jiménez Moreno, Wigberto 720
Jing Jiang Hotel, Shanghai, China 22-23
Joan of Salisbury, Countess 628
Joggers: Milwaukee, Wis. **188**
John, King (England) 606, 629
Johns Hopkins University, Baltimore, Md.: Chesapeake Bay Institute 446
Johnson, Cecil E.: ***The Wild World of Compost.*** Aug., 273-284
Johnson, Iner 677
Johnson, Sylvan **784**
Johnston, Louisa 46-47, 51
Johnstown, Pa.: Floods 165, 174; Aftermath **164, 165**
Jonathan Padelford (river steamboat) 689
Jones, Arthur 184
Jones, Dewitt, photographer: ***Coal vs. Parklands.*** Dec., 776-803
Jos. Schlitz Brewing Co., Milwaukee, Wis. 194; Chairman **193**
Judge, Joseph: NATIONAL GEOGRAPHIC: Sole Associate Editor 427
Juhaiman al-Utaibi 297; Beheaded 298
Julesburg, Colo. 50, 59
Juneautown settlement (1830s), Milwaukee, Wis. 186, 187; Map 185
Jurade (Bordeaux wine officialdom) **243**

K

Kaaba (shrine), Mecca, Saudi Arabia 297-298, 314, 327
Kabalega Falls National Park, Uganda: Elephant slaughter (poaching 1966-1980) 578, 584; Diagrams depicting **578;** Military, slaughtering by the 578, 584; Number surviving 578, 584
Kabul, Afghanistan 335, 338
Kaiparowits Coal Development and Transportation Study (1979) 782
Kaiparowits Plateau, Utah 782, **786-787,** 803; Coal development, proposed 782, 783
Kaiparowits power project (Utah), cancellation of (1976) 778, 785, 786, 788, 796
Kakwa (tribe): Uganda 75, 84
Kamba people: Kenya: Ivory poaching 585
Kambites, Jerry and Sarah **72-74, 79, 80, 85, 89;** ***Return to Uganda.*** July, 73-89
Kampala, Uganda 74, 75; Hospital 76, 77, **80;** Residents **76**
Kanab, Utah: Courthouse 784, 785, **789;** Tourism 779, 785
Kane County, Utah 782-783; Federal land 779, 784
Kao Tiensue 28, 29, 30
Kapoeri Creek, Suriname: ***Giant Otters: "Big Water Dogs" in Peril.*** By Nicole Duplaix. July, 130-142
Karanovo, Bulgaria: Settlement-

mound excavation 114, 117, **118,** 121; Artifacts 117, **118, 119**
Karbala, Iraq: Shrine **345**
Kavajë, Albania: Carpet factory **547**
Kazanluk, Bulgaria: Thracian tomb 125, 129; Mural **126-127**
Kazanluk rose **102, 103,** 104
Keillor, Garrison 666
Kelly, J. G. 65
Kelp: California waters: ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426
Kendo fencers **502-503,** *cover*
Kenya: Elephants 585, **600,** protection of (ivory-trade ban, 1978) 585, 598, slaughter of (pre-1978) 571, 585; Ivory trade 584-585, 599, confiscated ivory 585, **598-599,** smuggling 585, 599
Kepone (insecticide) 453, 456; Dumping of: James River, Va. 453
Kettle River (town), Minn.: Water wells: Natural-gas reservoirs and 144
Khalid, King (Saudi Arabia) 297, 304, 320-321, **320,** 324
Khalid al-Faisal, Prince (Saudi Arabia) 319, 322
Khan el-Khalili bazaar, Cairo 342
Khomeini, Ruhollah, Ayatollah 338; Photographic displays of 296, **313, 334,** 339; Shia supporters: Saudi Arabia 298, 313
Khrushchev, Nikita S.: Albanian painting of **537**
Kilbourn, Byron 186-187
Kilbourntown, Milwaukee, Wis. 191; Settlement (1830s) 186-187, map 135
Kimala, Adam 76, 77
"kin selection" (evolution theory) 846, 849
King, Thomas Owen **58**
King Khalid Military City, Hafar al-Batin, Saudi Arabia 330
King Ranch, Texas: Cattle breeding 499
Kitty Hawk (helium balloon): **Kitty Hawk *Floats Across North America.*** By Maxie and Kristian Anderson. Aug., 260-271
Knab, Tim 751
Knecht, Ron 800
Knights of the Garter: Banners **624,** 628; Coats of arms **622;** Installation procession 628, **630-631**
Knives, stone **736, 772,** *cover*
Knysna forest, South Africa: Elephant herd, remnant 590-591
Kohen, Sami 530, 545, 551, 552
Kolob Terrace, Utah: Coalfield 778, 783
Koran 314, 323, 324, 332
Korea, North: Exports to China 21
Kostov, Kosta **102**
Kostov, Vladimir 110
Kraga, Zelliha 546
Kramer, Tommy 678
Krantz, George 448-449, 453
Kremikovtsi, Bulgaria 104
Kropf, Jim 785, **789**
Kruger National Park, South Africa: Elephants: Management of 590; Number of 590
Krujë, Albania 553
Kwangtung Province, China *see* Guangdong
Kwashiorkor: Victim **81**
Kwiatkowski, Bill 193
Kwiatkowski, John 193
Kwiatkowski, Tony 193
Kycyku, Kopi 537
Kyoto, Japan: Bamboo 516, 522

L

La Antigua, Mexico 205
Labongo, Alfred 584
La Brède, Château de, Bordeaux (region), France 251; Wine 251
La Conchita (archaeological site), Mexico 205; Excavation **216;** Finds 205, 213-214
La Couronne (ivory trade company, 1976-1979), Central African Republic 596, 601
Lada (Soviet automobile) 97
Lafite-Rothschild, Château, Bordeaux (region), France **247,** 248; Wine 246, 247, 248-249, vintage 1799 248, **250**
Lake Manyara National Park, Tanzania: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
La Margarita, Estancia, Argentina **488-489**
Lamshed, Barry 650
Land clearing: River sedimentation and 438, 453
Land reclamation: Albania 545, 550; Desert landscaping **178;** Mormons (1800s) 169; Reclamation Act (1902) 169; Strip-mining areas **782-783,** 783, 791
Land reform: Portugal 822, 825, 826-827; Resistance to 821, 824
Land use: Africa: Elephant range and 568, 571, 578, 601; ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
Landry, Elude, and family **384, 385;** Firewood lot 394, harvesting **384, 385,** 394, 395
Landsat images: Chesapeake Bay system, and regions, Md.–Va. **436-438**
Lanhupuy, Wesley 652
Lassos, rawhide: Gauchos 482, **482, 483,** 486
Las Vegas, Nev.: Power plant near, proposed 778, 787, 788, 800
Latimer, George 679, 682, **687**
Lavies, Bianca **278, 279;** photographer: ***The Wild World of Compost.*** Aug., 273-284
La Villa Rica de la Vera Cruz (Veracruz), Mexico: Founding; original site (1509) 204, 205
Lavurov, Stoyan 91
Lawrence, Charles 388
Lawrence, Thomas: Portraits by 621
Lawton, Daniel 241, 246
Laxalt, Robert: ***The Gauchos, Last of a Breed.*** Oct., 478-501
Lazarov, Michail 114
Leach, Jeff 395
Lebanon: ***Islam's Heartland, Up in Arms.*** By Thomas J. Abercrombie. Sept., 335-345
Lee, Larry 666
Leen, Sarah, photographer: ***Return to Uganda.*** July, 73-89
Leeward Islands, West Indies *see* Dominica
Lefevre, Ellis **63**
Lehr, Jay 161
Lenin, Nikolai: Portraits of: Bulgaria **94,** 96, 100; China 37
León-Portilla, Miguel 723
Levathes, Louise: ***Milwaukee: More Than Beer.*** Aug., 180-201
Leydet, François: ***Coal vs. Parklands.*** Dec., 776-803
Lichens: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566
Lichine, Alexis 246, **246;** Wine classification system 246, 248; Wine encyclopedia 246
Lieblich, Amia 342
Life on a Rock Ledge. By William H. Amos. Oct., 558-566
Light bulb: Bamboo filament 522, **529**
Ligocki, Daniel, family 192
Likens, Gene 168
Limpinho, Tome 825
Lion: Feeding **844**
Liquefied natural gas: Cove Point, Md., terminal 460; Accident (1979) 460; Safety record 460
Lisbon, Portugal 809-810, **812, 813, 831;** Aerial view **811;** Moorish influence 810; Parade **812;** Shacks **813;** Shipyard 830
LISNAVE shipyard, Portugal: Repair dock 830
Littlehales, Bates, photographer: ***Giant Otters: "Big Water Dogs" in Peril.*** July, 130-142
Liu Fengzhu 22
Lloyd George, David 629
Lockheed Company: Microwave detoxification system **155**
Locust, rock 558, **566**
Log canoes **432, 433**
Logging, mechanical 394, 397
Long, Clarence D. 456
Looting: Hurricane aftermath **350-351,** 351, 358
López family 732, 734
López Mateos, Adolfo: Quoted 764
Los Manantiales, Estancia, Paraguay: Cattle drive **498-499;** *vaqueros* **494**
Louis Napoleon, Emperor (France) *see* Napoleon III
Lule, Yusufu 74, 84
Lumbering: Africa's primary forests, destruction of 601; Madawaska (region), Canada–U. S.

385, 388-389, 394, 395, 397, **402-403**
Lumley, Bob 666-667
Lur-Saluces, Alexandre de, Comte 242, 248
Lutyens, Edwin: Queen's Dolls' House plans 635

M

MSX (oyster disease) 449, 452
Macalester College, St. Paul, Minn. 689; Football camp for children **690-691**
McArthur, Rudger M. 798-799, 800, **800**
McCanles, David 56
"McCanles gang" 56
McClure, Floyd A. 507, 508, 511
McDowell, Bart: ***The Aztecs.*** Dec., 714-751
"Macedonian question": Balkan Peninsula 95, 100
McFarland, Malcolm 67
MacGahan, J. A. 96
McGuire, Al 189
McKeithan, Daniel **193**
Mackelprang, Jet 790-791
Mackerel (*carapau*) 825; Drying **826-827**
ma-dake (bamboo): Flowering 522; Growth rate 504; Light bulb filament 522
Madawaska (region), Canada-U. S.: ***Madawaska: Down East With a French Accent.*** By Perry Garfinkel. Sept., 380-409
Bounds; location 380; Map 386-387
Crafts *see* Folk art, *below*
Culture, preservation of 388, 394 *see also* Festivals; Folk art; Language, *below*
Education 388; Schools **406-407,** 408, bilingual program 387, 388, graduating class (1979) **407**
Family unity **385,** 394-395, **395,** 401, 405, **408-409;** Size of family 405, 406
Festivals 394, **398-399,** 400
Folk art **392, 393,** 394
Hydroelectric project, proposed 386, 401, 405
Language 380, 385, 387, 388; Bilingualism 387, 388, 394
Lumbering **385, 388-389,** 394, 395, 397, **402-403**
Map 386-387
Milling 380, 387
Political allegiance 380, 381, 386, 388, 397; Dual citizenship 386, 389
Potato farming **382-383,** 386, 387, 400-401, **408-409**
Pulp and paper industry *see* Fraser Inc.
Religion 387, 400; Churches **400,** 408; Importance of 405, 408
Settlement: Acadians 385, 394; Scotch-Irish 401, 406
Madawaska, Maine: Paper mill 386, 387, 395, **403;** U. S. Immigration office **389**
Madawi al-Hassoun 318
Madden, Robert W., photographer: ***Hurricane!*** Sept., 346-379
Magna Charta 606, 629
Maguey cactus **730;** Pulque made from 219, 222, 730, 731
Maguey Foundation: Pulque promotion 731
Maier, Henry W. **189,** 195
Mail service: West, U. S. (1860s) *see* Pony Express
Maine: ***Madawaska: Down East With a French Accent.*** By Perry Garfinkel. Sept., 380-409
Maitret, Clemente 227
Maitret ranch, San Rafael, Mexico 226, **226-227**
Maize cultivation: Veracruz (state), Mexico **202;** Antiquity of 209, 214
Majors, Alexander 46, **47,** 51
Malangi, David 654, 655, 656, 663; Daughter **654;** Paintings by **647,** 655, 656
Mali: Elephants 602-603; Coexistence with man 602, 603; Number remaining (1979) 578, 602
Malinalco (ruins), Mexico 750; Chamber **710-711**
Malnutrition: Kwashiorkor victim **81**
Mandarg (Aboriginal) 652, 655; Family 652, 655, **660-661**
Mandily, Fatma 318
Mangallod (Aboriginal outpost), Australia 652, 654, 655
Maningrida (Aboriginal settlement), Australia 652, 655; Outstations 654
Mannequin, live: Annapolis, Md. **459**
Manor houses: Vineyard estates, Bordeaux *see* Châteaux
Man's Eighty Centuries in Veracruz. By S. Jeffrey K. Wilkerson. Aug., 203-231
Manyara National Park, Tanzania *see* Lake Manyara National Park
Mao Zedong 34, 39
Maps:
Albania 539
Australia: Arnhem Land 649
Aztec Empire: *Visitor's Guide to the Aztec World; Mexico and Central America.* Dec. supplement
Baja California (peninsula), Mexico 694
Bordeaux (region), France 238
Bulgaria 95; Second Bulgarian Kingdom (1240) 95
Canadian–Maine border 386-387
Central America: *Visitor's Guide to the Aztec World; Mexico and Central America.* Dec. supplement
Chesapeake Bay system, and regions, Md.-Va. 439-441
China: *The People's Republic of China; The Peoples of China.* July supplement; Shanghai, showing former foreign settlements 20
England: Thames (river), historic buildings along: Windsor Castle–Tower of London 614
Madawaska (region), Canada–Maine 386-387
Maine–Canadian border 386-387
Mexico: *Visitor's Guide to the Aztec World; Mexico and Central America.* Dec. supplement
Middle East: *Two Centuries of Conflict in the Middle East; Mideast in Turmoil.* Sept. supplement
Milwaukee, Wis. (1835, 1900, today) 185
Minnesota: Minneapolis and St. Paul 667
Portugal 806
Pre-Columbian map: Gulf coast area **203**
Uganda 75
Veracruz (state), Mexico 205
Marden, Luis: ***Bamboo, the Giant Grass.*** Oct., 502-529
Mardinian, Ohannes 339
Margaret, Princess (Great Britain) 611, 614
Margaux, Château, Bordeaux (region), France **247;** Wine 246
Maria II, Queen (Portugal): Palace **828**
Marian shrine *see* Our Lady of Fátima
Marine biology: ***My Chesapeake —Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467; ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426
Marinov, Raicho 112
Maritsa Valley, Bulgaria 114 *see also* Valley of Roses
Markets, open-air: Bordeaux (region), France **253;** Flea markets: Chesapeake Bay region, Md.-Va. **456-457;** Papantla, Mexico 204, 205, **224, 229**
Markley, Jim 52
Markov, Georgi: Assassination of 110
Marley, W. C. 65
Marquette University, Milwaukee, Wis.: Chapel 180; Faculty members 189, 192, **195**
Marriage customs: Albania 533, reforms 553, 556; Uganda 79; *see also* Aboriginals
Marshall, Paul 464, 466
Marshall, Stanley 461
Martin, Guy 795, 796
Martin, Jim 677
Martin, Rowan 590
Marto, Francisco 833, **839**

Marto, Jacinta 833, **839**
Marvy, Bill **685**
Marx, Karl 553
Mary, Queen (Great Britain, Consort of George V) 615, 632; Portrait, miniature **639**
Maryland: ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467
Masks: Burial masks: Ancient Bulgaria **114,** 123; Jaguar fighters (Mexican rain makers) **742, 743,** 749; Turquoise (Aztec artifact) **737**
Maté 478, 490, 491, 501
Matheson, Scott 67, 783, 796
Matos Moctezuma, Eduardo 718, **773; *New Finds in the Great Temple.*** Dec., 767-775
Matten, Francis **164**
Mattes, Merrill 57
Mauney, Michael, photographer: ***Milwaukee: More Than Beer.*** Aug., 180-201
Mauritania 602; Elephants remaining 578, 602
May 1 parade: Lisbon, Portugal **812**
Maya Hernández, Ildefonso 738, 745
Mayodo, Jobari 134, 136
Mazzatenta, O. Louis, photographer: ***The Gauchos, Last of a Breed.*** Oct., 478-501
Mecca, Saudi Arabia 286, 298, 301, 309, 314, 338, 343, 344; Pilgrimage to *see* Hajj; Sacred Mosque **312,** siege of (1979) 297, 298, 313, 327
Medellín Zenil, Alfonso 213
Medicine and health: Bamboo compounds 515-516; China 28, acupuncture 28, folk medicine **30, 31,** surgery 28, digit-reattachment surgery 28-30; Dental-hygiene school **194;** Medical discoveries 184
Medicine men; shaman: Aboriginal **661;** Mexico **746, 747,** 748; Navajo **179**
Medieval Europe *see* Aquitaine, duchy of
Medina, Saudi Arabia 286, 298, 301, 309, 314
Médoc (wine district), France 238, 249; Wine estates *see* Lafite-Rothschild; Mouton-Rothschild; Palmer
Médocains 249
Melocanna baccifera (bamboo): Fruit 522
Mendota, Calif.: Subsidence: Spring floods and 174
Mendoza Codex 723; Illustrations from **723, 752**
Mentzelopoulos, André 247
Mentzelopoulos, Laura **247**
Mériadeck (quarter), Bordeaux, France: Redevelopment project **257,** 258-259
Metallurgy: ***Ancient Bulgaria's Golden Treasures.*** By Colin Renfrew. July, 112-129
Methodius, Saint 95, 104; Parade honoring **94-95**
Mexcaltitán, Mexico 720, 722
Mexico: Natural gas 204, 226; Oil 204, 205, 226; Pre-Columbian cultures *see* Aztecs; El Tajín; The Painters
Mexico, Gulf of: ***Hurricane!*** By Ben Funk. Sept., 346-379; Oil-well blowout (1979) 228
Mexico City, Mexico: ***The Aztecs.*** Dec., 704-775: I. ***The Aztecs.*** By Bart McDowell. 714-751; II. ***The Building of Tenochtitlan.*** By Augusto F. Molina Montes. 753-765; III. ***New Finds in the Great Temple.*** By Eduardo Matos Moctezuma. 767-775; IV. ***Visitor's Guide to the Aztec World*** (supplement)
Archaeological excavations 717-718, 767, 770, **771,** 773, **774, 775**
Aztec era *see* Tenochtitlan, *outlined*
Markets 730
Museums 718, **718-719,** 720, 731, 759
Plaza of the Three Cultures 764, **764-765**
Population 730; Growth 730
Pre-Columbian history *see* Aztecs, *outlined*
Suburb **716-717**
Subway construction, archaeological finds and **706-707,** 718, 761, 764, 770
Meza (gaucho) 486
Miami Beach, Fla.: Hurricane (1979) **347,** 365; Evacuees **362, 363**
Michaud, Roland, and family **389**
Microwave detoxification systems **155**
Middle East: ***Islam's Heartland, Up in Arms.*** By Thomas J. Abercrombie. Sept., 335-345; Minority-group unrest 285; Soviet Union and 285; ***Two Centuries of Conflict in the Middle East; Mideast in Turmoil.*** Sept. supplement; *see also* Saudi Arabia
Midshipmen: U. S. Naval Academy **459**
Migration, animal: Spawning season: Blue crabs 440; Striped bass 453
Milingimbi Island, Australia 649, 652
Miller, Bob **448**
Miller Brewing Company, Milwaukee, Wis. 194; President **193**
Millipedes **274-275,** 284
Milpurrur (Aboriginal) 657, 659, 660, 663
Milwaukee, Wis.: ***Milwaukee: More Than Beer.*** By Louise Levathes. Aug., 180-201
Aerial view **186-187**
Architecture, notable 180, 187, 189; Domestic **182,** 187, 189
The arts 184; Facilities *see* Cultural facilities, *below*
Breweries 184, 193, 194; Brewhouse **198;** Brewing techniques 194; Executives of **192-193,** 194; Map locating 185
Celebrations; observances **180-181, 188,** 189, **190-193,** 195
Civic groups *see* Inner city, *below*
Civil-rights protests 184, 197, 199
Climate *see* Winters, *below*
Colleges and universities 180, 189, 192, **194,** 195, 199; Map locating 185
Cultural facilities 180, 184, 187, 197
Desegregation problems 184, 199
Ethnic communities **182,** 185, 186, 187, 189, 191-193; 1900s (map) 185
Geohistory 186
History 185, 186-187 *see also* Settlers; settlements, *below*
Immigrants 184 *see also* Settlers; settlements, *below*
Incorporation 184, 185, 186
Industry; commerce 180, 184, 195, **196, 197;** Commercial development **187,** 197; *see also* Breweries, *above*
Inner city, decline of 184, 186, 189; Business-and-community counteractive programs 187, 197, 200-201
Lakefront 184, **186-187,** 190, 197
Maps: 1835 settlements; 1900 ethnic communities; Present-day Milwaukee 185
Mayors: Present mayor *see* Maier, Henry W.; Socialist mayors 197 *see also* Zeidler, Frank
Medical discoveries 184
Name, origin and meaning of 186
Neighborhood renovation 187, 200-201
Newspaper tradition 184
Park system 190; Parks 184, 189, **190-191,** 195, 198, map locating 185
The people 180, 184, 189, 190-191, 198; Notables 184, 195, **195,** 197; Population 180, decline in 184, 186; *see also* Ethnic communities, *above;* Social and economic strata, *below*
Police department 197
Politics 183, 184, 195, 197
Problems 184, 194-195, 197 *see also* Desegregation problems; Inner city, decline of, *above*
Recreation and entertainment **188,** 189, 192 *see also* The arts, Celebrations, *above;* Sports, Taverns, *below*
Settlers; settlements (1830s) 185, 186-187, 192; Map 185
Size, comparative 180, 185
Social and economic strata 184, 198-199

Sports; sports events 184, **188;** Baseball team 180, 184, fans 180, 184, stadium **180-181,** 184, 197
Taverns 193-194, **198-199**
Taxes 189; State taxes 194
Urban affairs 183, 189, 192, 195, 197 *see also* Politics; Problems, *above*
Winters 184, 189-190, 198, 201
Milwaukee Area Technical College 194; Student **194**
Min River, China: Bridge, bamboo-cable 516
Minhang, China 37
Miniatures: Basket **508;** ***Royal House for Dolls.*** By David Jeffery. Nov., 632-643
Minneapolis, Minn.: ***Minneapolis and St. Paul.*** By Thomas J. Abercrombie. Nov., 665-691
Buildings, notable **664,** 666, **668-669, 672, 673**
Grain Exchange **676**
Growth 665, 666
History 667, 678-679
Industry; commerce 682; Grain 664, **676**
Map 667
Mayor *see* Fraser, Donald M.
Name origin 667
Neighborhood restoration 679
Performing arts: Orchestra **672,** 677; Theater 677
Recreation **668-669, 674,** 675, 677, 689-690; Winterfest **680-681**
St. Paul and *see* Twin Cities, *outlined*
Scandinavian population 677
Skyways **673,** 689-690
Urban renewal **668-669,** 678-679; Private sector funding 672, 679
Minneapolis American Indian Center 675
Minneapolis Grain Exchange **676**
Minnehaha Creek, Minneapolis, Minn. 666, **674-675,** 677
Minnehaha Falls, Minneapolis, Minn. **675,** 677
Minnesota: ***Minneapolis and St. Paul.*** By Thomas J. Abercrombie. Nov., 665-691
Minnesota Mining and Manufacturing Company (3M): Commercial Tape Laboratory 688; Products **687,** 688; Workers' benefits 682, 688
Minnesota Orchestra: Minneapolis **672,** 677; Hall **672**
Minnesota State Fair **684**
Minnesota Vikings (football team) 677-678; Fans **670, 687**
Minnesota Zoological Garden, Apple Valley, Minn. 691
Minnetonka, Lake, Minn. 666, **671**
Miró, Joan: Painting by **474**
Mishaal, Princess (Saudi Arabia): Execution of 332
Missionaries: Arnhem Land, Australia 649; Mexico, 16th-century 718, 732, **733,** 765
Mississippi: Flood (1979) 174; Hurricanes 352, 361, 376
Mississippi River, U. S.: Flood (1927) 174; St. Paul, Minn. **686-687;** River boats 689
Missouri River, U. S.: Ferry **48,** 52
Mitau, Ted 689
Mitchell, James P. 159
Mitchell Bank Building, Milwaukee, Wis. 189
Mites **274,** 275, **275,** 280, 283, 566; Beetle mites **559;** Population density 566; Species, number of classified 283
Moab Valley, Utah: Smog **794,** 795
Mo-an Church, Shanghai, China **8-9,** 33
Mobile, Ala.: Hurricane (1979) 346, 350-351; Looting; profiteering following **350-351,** 351-352
Mobile Bay, Ala.: ***Hurricane!*** By Ben Funk. Sept., 346-379
Mobutu Sese Seko 594
mochila (knapsack) 52, **57,** 64, 66, 70
Moctezuma I (Aztec ruler) 727, 732, 741
Moctezuma II (Aztec ruler) 718, 736, 759, 764; Death 732
Moehlman, Patricia D.: ***Jackals of the Serengeti.*** Dec., 840-850
Mold, grape **242,** 248
Moliceiros (boats) **806-807, 826**
Molina Montes, Augusto F.: ***The Building of Tenochtitlan.*** Dec., 753-765
Mondale, Joan Adams 689
Mondale, Walter F. 678, 689
Mongoose, pet **575**
Monpazier, France 239, **256**
Montaigne, Michel de 244-245, 249
Montaigne, Château de, Bordeaux (region), France 249; Wine 245, 251
Montesquieu, Charles Louis de Secondat, Baron de La Brède et de 251
Moore, Bobby *see* Ahmad Rashad
Moore, Curtis **66**
Moors: Portugal 809, 810
Moray eel **424**
Morin, Adrian, and family 401
Mormons: Irrigation technology (1800s) 169
Morneault, Alfred **392,** 394; Wood carvings **392, 393,** 394
Morrison, Tom 58
Mosses: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566
Mota y Escobar (17th-century Mexican bishop) 231
Moths **560, 561**
Mottled bamboo **520**
Moueix, Christian 249
Mountbatten-Windsor (dynastic name) 610, 629
Mouton-Rothschild, Château, Bordeaux (region), France **250-251;** Wine 246, 251
Mozambique: Independence 813, 814
Muehl, Joseph 194
Muhammad (prophet) 314, 323, 338, 341, 344
Muhammad Aba al-Khail 319
Muhammad ibn Abdullah al-Qahtani 297
Muhammad ibn Abdulwahhab 301, 323
Muhammad ibn Saud 301, 323
Muir, John 169
Mujahid Al Sawwaf 332
Mulago Hospital, Kampala, Uganda 76, 77, **80**
Mulcahy, Keith 71
Mural: Thracian tomb 125, **126-127**
Murra, Gjergj 546
Musa, Taata 78, **78,** 79
"Muscle and smoke, commerce and crowds." A Shanghai Portfolio by Bruce Dale. July, 2-13
Museum *see* Georges Pompidou National Center of Art and Culture
Mushroom: *Russula emetica* **560**
Musical instruments, primitive: Aboriginals 652, 663
My Chesapeake—Queen of Bays. By Allan C. Fisher, Jr. Oct., 428-467

N

Nabarlek, Australia: Uranium mining 652
Nahuatl (language) 714, 718, 720, 723, 731-732, 738, 745, 747, 751; Poetry: Quoted 720, 722, 732, 738, 751, 753
Nahuatl Indians: Dead, rites for the 745, **747;** Rain-making ceremony 743, **743,** 748-749, 750; Shaman **746,** 748, offering ritual **747**
Nairobi, Kenya: Ivory trade (pre-1978) 584-585; Smuggling 585
Najd (region), Saudi Arabia 296, 298, 301, 314
Nangalala (Aboriginal settlement), Australia 649, 650, 657, 663
Nanjing, China: Technological College of Forest Products 510, 511
Nankyama, Theodoros 76, **82**
Nanni Lake, Suriname: Island **141**
Napoleon III, Emperor (France): Windsor Castle visit 615, 621, 623
National Aeronautic Association 263
National Demonstration Water Project 156
NATIONAL GEOGRAPHIC (NGM): Associate Editor: Joseph Judge 427; Editor: Wilbur E. Garrett 567, elected GEOGRAPHIC's seventh editor 427, Gilbert M. Grosvenor 427; Purposes; policies 567
National Geographic Society: Board of Trustees: Robert E. Doyle elected Vice Chairman of 427; Grants 132, 213, 840; History: Election of officers 427;

President: Robert E. Doyle: Retired; named Vice Chairman of Board of Trustees 427, Gilbert M. Grosvenor 567, election of 427; Television: Program announcements (1981 series) *see* Television series
National Hurricane Center, Miami, Fla.: ***Hurricane!*** By Ben Funk. Sept., 346-379
National Oceanic and Atmospheric Administration (NOAA): Hurricane research 365; ***Into the Eye of David.*** By John L. Eliot. Sept., 368-369
National parks, African: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
National parks, U. S.: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
National Pony Express Association 67
National Water Well Association: Convention **170-171;** Executive director 161
National Weather Service: ***Hurricane!*** By Ben Funk. Sept., 346-379
A Nation's Quandary: Coal vs. Parklands. By François Leydet. Dec., 776-803
Natividad, María 491
Natural gas: Mexico 204, 226; Prices: Agricultural effects of 160, 172; Saudi Arabia's utilization of 303, 327
Natural-gas reservoirs: Water-well contamination and 144
Nature preserves: Suriname 141, 142; Map 135
Nature's Kingdom on a High Rock Ledge. By William H. Amos. Oct., 558-566
Navajo Generating Station, Ariz. **796-797**
Navajo Mine, N. Mex.: Land reclaimed, stripped **782-783,** 791
Navajo Reservation, Ariz.: Irrigation project 173
Navajo sandstone aquifer, Ariz.-Utah 778, 787, 790
Navajos: Medicine man **179**
Nazaré, Portugal: Beach **804-805;** Fish drying **826-827;** Fishing boats **805,** 825
Nebraska: Farms **54-55,** 57; Pony Express route 56-59, 61
Nematodes 273, **277;** Compost-pile role 273, 277, 280, 281, 282
Nepal: Bamboo thicket **505**
Nevada: Pony Express route 64; Retracing (1979) **50-51,** 70
Nevada Power Company: Allen-Warner Valley sponsor 788
Nevada Territory: Indian wars 64-65
New, Dan **175**
New Brunswick (province), Canada: ***Madawaska: Down East With a French Accent.*** By Perry Garfinkel. Sept., 380-409
New Course for Portugal. By William Graves. Dec., 804-831
New England *see Maine*
New Englanders: Milwaukee, Wis., settlement 187, 189
New Finds in the Great Temple. By Eduardo Matos Moctezuma. Dec., 767-775
New Jersey: Coastal islands: Hurricane-disaster potential 378
New York, N. Y.: Water supply 144; Gallons used per day 144
New York Zoological Society: Study grants: Douglas-Hamilton elephant survey 578, 584
Newman, Cathy: ***Pompidou Center, Rage of Paris.*** Oct., 469-477
Nezahualcoyotl (king of Texcoco) 727, 735, 738; Poetry by 732, 738
Nhulunbuy, Australia: Bauxite mining 651
Niches, Temple of the, El Tajín (archaeological site), Mexico **207,** 209, **210-211,** 216, 222, *cover*
Nikolov, Bogdan 125
Nikolov, Veselin 103
Niños de Dios (images): Blessing of **734-735**
Niokolo Koba National Park, Senegal: Elephants 602
Noble, Brian 461
Noble rot *see* Mold, grape
Nomads *see* Bedouin
Norfolk, Va. 447; Shipping 441
North, Wheeler J. 426
North Dakota: Red River floodplain **162-163**
Northwestern Mutual Life Insurance Building, Milwaukee, Wis.: Architecture 189
Nova Scotia: French colonists 385, 388
Nuclear power plants: Bordeaux (region), France **258-259;** Calvert Cliffs, Md. 460, radioactive-gas leaks (1980) 460; Three Mile Island, Pa.: Reactor accident 460-461

O

Oak, cork: Portugal **821,** 830
Oakland, Calif.: Water conservation: Class **169;** Drought response (1976-1977) 179
Obote, Milton 84
Octopus *(Octopus bimaculatis)* **418, 419,** 422
O'Donnell, William 195
Oenpelli, Australia: Uranium mining 651
Ogallala aquifer, U. S. 158; Depletion 158-159, 161; Size 150, 158
Ogilvie, James L. 169
Ogutu, Matthews 585
Ohio River, U. S.: Flood (1927) 174
Oil: Mexico 204, 205, 226; ***Saudi Arabia: The Kingdom and Its Power.*** By Robert Azzi. Sept., 286-333
Oil-refinery construction: Virginia: Opposition to 460
Oil resource, potential: Tar sands: Utah 778, 783
Oil spill: Chesapeake Bay (1976): Waterfowl casualties 460
Oil-well blowout: Gulf of Mexico (1979) 228
Ojibwa Indians: Minnesota 674, 675
Oker, Mike 675
Old Windsor, England 611
O'Leary, Bob 405
Olmsted, Frederick Law 189
Ontario, Lake, Canada-U. S.: Chemical pollution 155
Open housing: Demonstrations for: Milwaukee, Wis. 199
Opium Wars: China 18, 20
Orchard Inn, Milwaukee, Wis. **198-199**
Orderville, Utah: Ranch near **785**
O'Rear, Charles, photographer: ***Baja's Murals of Mystery.*** Nov., 692-702
Oregon Trail 56, 59, 61
Oroville Dam, Calif.: Height 175
Ortiz, Ponciano 217
Oswego, N. Y.: Chemical cesspool **154-155,** 166
Otters *see* Giant Brazilian otters
Ottoman Empire, Sept. supplement; Albania 532, 539, 543, 553; Arabian Peninsula 301, 323; Bulgaria 93, 95, 96, 106, 1876 massacre 96
Ouellette, David and Sharon **408-409**
Our Lady of Fátima, Shrine of: ***Fátima: Beacon for Portugal's Faithful.*** By Jane Vessels. Dec., 832-839
Our Most Precious Resource: Water. By Thomas Y. Canby. Aug., 144-179
Ovens, dome: Ancient Bulgaria **120,** 121, 122, **123**
Oxford, Md. **442-443,** 447, 450; Sewage runoff; sewage treatment 448, 449
Oyster festival: St. Marys County, Md. **464**
Oyster larvae 448
Oyster shucker champion (1979) **464**
Oysters; oyster industry: French *gravettes* 239, 255; ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467

P

Pabst, August 194
Pabst, Frederick 194
Pabst Brewing Co., Milwaukee, Wis. 194; Brewhouse **198;** Company officers **192,** 194; Founder 194
Page, Ariz.: Power plant **796-797**
The Painters (Indians): ***Baja's Murals of Mystery.*** By Harry Crosby. Nov., 692-702
Paintings, miniature: ***Royal House***

for Dolls. By David Jeffery. Nov., 632-643
Paiute Indians: Uprising (1860) 64, 65, 71
Palácio da Pena, Sintra, Portugal **828**
Palaeomastodon (Eocene-Oligocene) 582, **582, 583**
Paleo-Indians: Mexico 204, 205, 213-214, 216; Figurines 214, **217;** Tools 214
Palestine Liberation Organization 340, 341, 342, 344; Children commando trainees 340-341, **342**
Palestinian issue 285; Saudi Arabian policy 296, 297, 330
Palestinian refugees: Lebanon 339, 340-341, **342**
Palmer, Château, Bordeaux (region), France **232;** Vine cultivators 249
Palmquist, Philip 688
Pan Quanfu 33
Panagyurishte, Bulgaria: Gold artifacts 129, **129**
Pancakes *see ployes*
Pandanus leaves: Bags woven from 651, 655
Pandas, giant: Starvation threat 511, 518
Pangaion, Mount, Greece: Gold mines 129
Papantla, Mexico: Market center 204, 205, **224, 229;** Aztec symbol for **225**
Paper, bamboo 504, 521, 528
Paper mill: Madawaska, Maine *see* Fraser Inc.
Paradis, Roger 394
Paraguay: Cattle **498,** breeds 499; *vaqueros* 493, **494-495, 499,** equipment **494-495**
Paris, France: ***Pompidou Center, Rage of Paris.*** By Marc Riboud. Oct., 469-477; Portuguese population 818
Parker, Ian 594
Parrant, "Pigs Eye" 667
Parsons, Amanda 718, **721,** 734, 745, 748, 751
Passaic River Basin, N. J.–N. Y.: Flood-control plans **166**
pataka (fish) **133,** 136, 142
Paths of Fury—This Century's Worst American Storms (hurricanes). Sept., 360-361
Patronas, Pete 372, **378**
Paula, Maria 814
Pazardzhik, Bulgaria: Greenhouses **110-111**
Pearl River, Miss.: Flood (1979) 174
Pecos, Texas: Irrigation costs 159, 160, 172; Abandoned farmland and 159, 160, **172-173**
Pectoral, turquoise (Aztec artifact) **736-737**
Pelican: Aboriginal quarry **650**
Pelletier, Alberic, and family **398-399,** 400
Pena (palace), Sintra, Portugal **828**
The Peoples of China; People's Republic of China. July supplement
Peppers, drying of **548-549**
Pérez Bautista, Don Pedro 231
Perfume industry *see* Rose-attar industry
Perkins, Frank O. 449, 452
Perreault, Juliet **395**
Perromat, Pierre 249
Persian Gulf: Superport **302-303**
Pesticides: Water pollution and 405; Agricultural runoff 446; Diagram **170;** Kepone dumping 453, 456
Petroglyphs: Baja California, Mexico 702, **702**
Petroleum *see* Oil
Pétrus, Château, Bordeaux (region), France 249; Wine 249
Pharmacy: Shanghai, China **31**
Philip II, King (Macedon) 105, 129
Philip II, King (Spain) 718
Philip, Prince, Duke of Edinburgh 611, 614, 615, 626, **630;** Driving four-in-hand **613, 627,** 629, *cover*
Philip Morris Inc.: Subsidiary 194
Phillips, Mark 630
Phillips, Peter 626
Phoenix, Ariz.: Water sources 169, 173
Photography, infrared: Chesapeake Bay system, and regions, Md.–Va. **436-438;** Santa Luisa (archaeological site), Mexico 217, **218-219**
Photography, microscopic: Bacteria **276;** Fungi **276**
Photography, space *see* Imagery, satellite
Phyllostachys bambusoides (bamboo) 504, 522; *P. glauca:* Growth **515**
Piano, Renzo 469
Pictographs: Mexican cultures, pre-Columbian: Aztec **225;** El Tajín 220, **221,** depicted **220-223;** *see also* The Painters
Pigeons: French market **253**
Pigment, volcanic-rock 694, 701, **701**
Pigs, in bamboo carrier **509**
Pigs Eye Island, St. Paul, Minn. 667; Wildlife 689
Pilgrimages *see* Fátima, Portugal; Hajj
Pill bug **281**
Pillsbury Doughboy balloon **680**
Ping pong: Shanghai, China **35**
Pinyin: Defined 1
Pipeline, coal-slurry (proposed): Utah–Nevada 778, 784, 787, 788
Pipeline, natural-gas: Veracruz (state), Mexico 226, 228
Piracy, 16th-century: English freebooters 225-226
Pirin mountains, Bulgaria 91, 92, 93, 100; Erosion 103
Plants: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566; *see also* Bamboo
Plaque, prehistoric clay: Bulgaria **118**
Platte River Valley, Nebr. **54-55;** Immigrant trails 55, 56-57
Plaza of the Three Cultures, Mexico City, Mexico 764, **764-765**
Pleistocene Epoch: Mammals: Mexico 213, 216; Proboscidea: Diagram **583**
Plovdiv, Bulgaria 95, 97, 103, **105;** History 105; Thracian burial mound **127**
ployes (buckwheat pancakes) 387, 388; World's largest **398-399,** 400
Poaching: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603
Poisons: Arrowhead concoction 585
Polgar, Tibor 453
Polish-Americans: Milwaukee, Wis. **182,** 183, 191-192; Settlement history 185, 187, 189
Pollution *see* Air pollution; Water pollution
Pollution cleanup: Industry 456, 460
Polo, Marco: Writings 516
Polo game: Windsor Castle, England 610, 611
Pompidou, Georges 469
Pompidou Center, Rage of Paris. By Marc Riboud. Oct., 469-477
The Pony Express. By Rowe Findley. July, 45-71
Pony Express Stables, St. Joseph, Mo. 46, **47**
Pony Express Stables museum, St. Joseph, Mo. 46, 52
Pony Express statue: California **68**
Pop art: ***Pompidou Center, Rage of Paris.*** By Marc Riboud. Oct., 469-477
Port (wine) 806, 809, 818, 821, 824; Shippers 824
Porterfield, Robert E. 460
Porto, Portugal **816-819;** Azulejos (tiles): Church facade **816-817;** Industry 810; Wine shippers 824
Pôrto Alegre, Brazil 501
Portugal:
After an Empire...Portugal. By William Graves. Dec., 804-831
Agriculture 822, 825, 827; Collective farm 825, 827, 830; Vineyards 815, 818, **820-821,** 822
Area 806, 809
Beaches **804-805, 828-829**
Capital *see* Lisbon
Climate 806, 815, 825-826, 828
Colonies, former 806, 813, 814; Refugees from 813, 814, 815, 828
Economy 806 *see also* Cork industry; Winegrowing; *and* Fishing industry; Tourist industry, *below*
Emigrant laborers 815, 818, 822
Fishing industry 806, 809, 825, **826-827**
Flag **806**
Foreign investments in **810**

Government 806, 813, 814; Communist takeover, attempted 821, 824
History 806, 809, 825; Exploration, global 806, 807, 809, 830; Moorish occupation 809, 810
Invasions 809, 822
Land reform 822, 825, 826-827; Resistance to 821, 824
Map 806
Population 804, 806
President *see* Ramalho Eanes, António
Revolution (1974) 813, 814, 826; Symbol 827
Tourist industry 806, 809, 810, 814, 815, 828; Revenue, annual 810, 815
Fátima: Beacon for Portugal's Faithful. By Jane Vessels. Dec., 832-839
Potato farming: Madawaska (region), Canada–Maine 386, 387, 400-401; Fields **382, 383, 408-409**
Potomac River, U. S.: Clam die-off 448; Sedimentation 438, 453
Poultry growers: Eastern Shore, Md. 454
Powell, Becky **181**
Powell, Lake, Ariz.–Utah **796**; Sedimentation 803
Power plants: Air pollution 782, 788, **796**, 797
Power plants, proposed *see* Allen-Warner Valley Energy System
Prayer vigil, candlelight: Fátima, Portugal **836**
Pre-Columbian civilizations: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231; *see also* Aztecs
Prieuré-Lichine, Château, Bordeaux (region), France 246, 247; Wine 248
Primelephas (Miocene-Pliocene) **583**; Evolutionary history: Diagram **583**
Primitive peoples *see* Aboriginals
Printing type, 17th-century **445**
Proboscidea: Evolutionary history 582-583, diagram **583**; Spread of species 582-583, map 582
Prosthetic surgery and devices: China 28-30
Protein sources: Algae 727
Przybylski, John: Store 191-192
Pseudoscorpions: Compost pile 279-280
Puberty rites *see* Circumcision rites
Public domain: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
Pulp mill: Edmundston, Canada *see* Fraser Inc.
Pulque: Aztecs 730, 731; Production, present-day 730, **730**, 731
Pulque ritual: El Tajín culture (pre-Columbian Mexico) 216, 219-220, 222; Depicted **222-223**
Pumpkin Lane (community), Shanghai, China 33, 34
Punt guns: Waterfowl hunting and 461, 464
Pygmies, African: Cameroon: Plantation owners 601, village dwellers 601; Elephant slaughtering methods 571, 601; Ivory trade and 601
Pyramids: Mexico **706-707, 712-713, 754-756**, 761, 764, **764-765**; ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231; ***New Finds in the Great Temple.*** By Eduardo Matos Moctezuma. Dec., 767-775

Q

Qatif, Saudi Arabia: Riots 298, 313
Quarles, E. B., and wife 372
Queen, Ervin 152
Queen's Dolls' House, Windsor Castle, England 606; ***Royal House for Dolls.*** By David Jeffery. Nov., 632-643
Quetzalcoatl (Toltec ruler) 762; Deification of, Aztec 762
Quimper, Gerald 397
Quinta do Castelo (vineyard), Portugal 822

R

Radar: Hurricane monitoring; tracking 361, 364, 365, 368, 369, 372
Rader, I. A. 197
Radio Free Europe: Bulgaria 110
Radioactive gas leaks (1979-80): Nuclear power plants 460-461
Radiophone, solar-powered: Saudi Arabia **333**
Radiotelemetry: Radio collar design improved 590
Railroad construction: Albania **538-539**
Rain-making ceremony: Zitlala, Mexico 743, **743**, 748-749, 750
Rainbow Bridge National Monument, Utah **802**
Rainfall: United States 148; Demarcation line 168, averages east and west of 168, map 150-151; *see also* Acid rain
Rainfall simulator: Erosion test **167**
Rainpool: Rock ledge 558, **562**
Ramalho Eanes, António 814
Ramangining (Aboriginal settlement), Australia 654, 655, 657, 663
Ramirez, Joseph 174
Ranch *see* Estancia
Raphael (Bulgarian Church monk) 107; Cross carved by **107**
Rapid Creek, S. Dak.: Flood (1972) 174
Rashad, Ahmad 678, **691**
Rashidiyah refugee camp, Lebanon 340
Rats, grass: Jackal predation **842, 843**, 846
Recycling: Sewage water, treated: Industrial use of 460; Waste, industrial: Sewage-treatment plants, used in 460; Water: Industry 179, treatment plant, family-size **149**; ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284; *see also* Hydrologic cycle
Red Carnation farm, Alentejo, Portugal 825, 827, 830
Red River of the North, Canada-U. S.: Floodplain **162-163**
Redford, Robert: Burned in effigy 785, **788**
Reedy, George **195**
Reeve, Ralph 689
Refugee camps: Middle East 340, 342
Refugees: Afghans 336; Palestinians 339, 340-341, **342**; Portuguese *retornados* 813, 814, 815, 828
Relief (sculpture): El Tajín culture (pre-Columbian Mexico) 216, 220, **221, 222**; Depicted **220-221**
Religions: ***The Aztecs.*** Dec., 704-775; El Tajín culture: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231; *see also* Christianity; Islam
Religious ceremonies and processions: ***Fátima: Beacon for Portugal's Faithful.*** By Jane Vessels. Dec., 832-839
Religious persecution: Albania 554; Church and Islamic property confiscated 533, 554
Rembarnga country, Australia 652; Rock paintings 655, **661**
Renfrew, Colin: ***Ancient Bulgaria's Golden Treasures.*** July, 112-129
Reni, Jules 59
Research vessels: Hurricane research 365; ***Into the Eye of David*** (hurricane). By John L. Eliot. Sept., 368-369
Return to Uganda. By Jerry and Sarah Kambites. July, 73-89
Reuss, Henry 195, 197
Revolver, Colt (1860 Army model) **56-57**
Reynal, Abbott 499
Reynolds, Don 46, 52
Reynolds, Steve 160
Rheas: Argentina: Hunting prohibited 482
Rhinoceros horns: Confiscated: Kenya **598-599**; Trade 528
Rhodesia: Elephant population (1978) 585, 588-590 *see also* Zimbabwe
Rhodopes (mountains), Balkan Peninsula 92, 93, 96
Ribeiro, Antonio 815
Riboud, Marc, photographer: ***Pompidou Center, Rage of Paris.*** Oct., 469-477
Richardson, Billy **44, 46**
Riggs, Dudley 677

Rila Monastery, Bulgaria 106, 107, **107**
Rivers: ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467; ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179
Riyadh, Saudi Arabia 293, 296, 323; Aerial view **292-293;** Governor *see* Salman ibn Abdulaziz
Robidoux, Joseph 48
Robinson, Frederico 493
Rock art: Aboriginals 655, **661; *Baja's Murals of Mystery.*** By Harry Crosby. Nov., 692-702
Rock formations: Nebraska 61, **65,** paintings of **46, 57;** Utah national parks: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803
Rock ledge life: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566
Rock tripe **561**
Rockfish *see* Bass, striped
Rocky Branch (valley), W. Va.: Water contamination 152, 156
Rodeos: South America 478, 493; Events **483, 484-485**
Roe, David 803
Rogers, Richard 469
Roman Catholic Church: ***Fátima: Beacon for Portugal's Faithful.*** By Jane Vessels. Dec., 832-839
Roman Empire: Albania 532, 539; Aquitania (Gallic province) 233, 238, 239, 240; Portugal 809
Roosevelt, Franklin D. **322**
Rose attar industry: Bulgaria 95, 103, 104; Rose harvesting **102, 103,** 104
Rothschild, Alphonsé de, Baron 248
Rothschild, Eric de **247,** 248
Rothschild, Philippe de, Baron 246, **250**
Rothschild family: Winegrowing *see* Lafite-Rothschild Château; Mouton-Rothschild, Château
Rouchdy, Cecile 318
Royal House for Dolls. By David Jeffery. Nov., 632-643
Rub al-Khali (Empty Quarter), Saudi Arabia **288-289,** 296; Oil exploration **288-289,** 319
Rudna Glava, Yugoslavia 122
Rufi, Doña 714, **715,** 717, 751
Rugs, Albanian **547;** Kilim 543
Rural America: Water poverty 152, 156
Russell, Don 58
Russell, William H. 47, **47,** 51
Russell, Majors, and Waddell (freighting firm) 46-47, 48, 51, 58; Express mail service *see* Pony Express
Russia: Bulgaria, liberator of (1878) 95, 96, 100, 106
Russian Revolution: Parade celebrating: Sofia, Bulgaria 96
Ruwenzori National Park, Uganda: Elephant decimation 584; Hippopotamuses **84-85**
Rwanda: Elephants: Eradication policy 594; 1979 count 579

S

Sacramento, Calif.: Pony Express terminus 46, 66, 67; Restored area **68-69**
Sacred Mosque, Mecca, Saudi Arabia **312;** Siege 297, 298, 313, 327, 343
Sacred Round calendar (Mesoamerican) 220, 221; Personal names and 220, 221, examples 220-221
Sacred Treasure, Order of the (Japan): Conferee **517**
Sadat, Anwar: Peace initiatives 340, 342, 343, 344
Saddles, gaucho 482, **482,** 486, **494**
Saffir, Herbert 352
Saffir-Simpson scale: Hurricane-classification system 352, 353
Saffooq al-Bashir 330, 332
Sagres Point, Portugal: School of navigation, 15th-century 807, 830; Site **807**
Sahagún, Bernardino de 718; Aztec culture documented by 718, 730, 732, **733,** 750, 772, 774
Sailboats *see* Moliceiros; Skipjacks
St. Agatha, Maine 400, 401; Barn **390-391**
St. David, Maine 394; Potato farm **408-409**
Saint-Émilion, France: Church **243**
Saint-Estèphe, France: Autumn fair **253**
St. François de Madawaska, Canada: Cyr family 405, 406
St. George, Utah 787, 788, 798, 799, 800
Saint George's Chapel, Windsor Castle, England 606, **608,** 628-629, **630-631;** Choir **624-625;** Royal tombs 628, 631
Saint John River Valley, Canada-U. S. *see* Madawaska (region)
St. Joseph, Mo. 46, **48-49;** Ferry **48,** 52
St. Marys City, Md.: Archaeological digs **445;** Finds **445**
St. Marys County, Md.: Oyster festival **464**
St. Michaels, Md.: Log canoe race **432**
St. Paul, Minn.: ***Minneapolis and St. Paul.*** By Thomas J. Abercrombie. Nov., 665-691
Energy Mobilization Program 679, 682
Farmers' cooperative **676**
History 667, 679
Industry, light 682, **685-687,** 688
Map 667
Mayor *see* Latimer, George
Name origin 667
Neighborhood restoration 679, **683**
Recreation 682, 690, 691; Winter Carnival **680,** 690
Religion 666
Settlers 666, 687
Urban renewal 679
Wildlife conservation 689
St. Paul Cathedral, St. Paul, Minn. **665,** 666
Saint-Phalle, Niki de: Sculpture by **474**
Ste. Félicité, Canada: *Kitty Hawk* landing 263, **270, 271**
Salazar, António 814
Saleh Kamel, Sheikh 318
Salisbury, Zimbabwe: Ivory trade 590
Salman ibn Abdulaziz, Prince (Saudi Arabia) 295, 314, 322, **325**
Saloon (Argentine *boliche*) 490
Salt buildup: Farmland, irrigated **172,** 174
Salt Lake Valley, Utah: Irrigation, introduction of (1847) 169
Salt production: Lake Texcoco, Mexico 727, 734, 751
Salt River, Ariz.: Dam 169
Salta (province), Argentina 493; Cattle ranch 486, **496-497**
Samarkand, Uzbek S. S. R. 338; Mosque **344**
San Francisco Bay area, Calif.: Drought (1977) 169, 179; *Kitty Hawk* launch site 263, **264**
San Gabriel Chilac, Mexico: Day of the Dead 751
San Gregorio, Arroyo de, Baja California: Rock art **700,** 701
San Joaquin Valley, Calif.: Salt buildup **172;** Subsidence **171,** 174
San Martín, José de 481, 497
San Miguel del Monte, and region, Argentina: Cattle ranch **488-489**
San Pablo, Arroyo de, Baja California **694-695;** Rock art 694, **696-697,** 699
San Rafael, Mexico 205, 226; Cattle ranch near 226, **226-227**
Sand painting **179**
Santa Catalina (island), Calif.: ***Undersea World of a Kelp Forest.*** By Sylvia A. Earle. Sept., 411-426
Santa Cecilia, Mexico: Pyramid, Aztec 761
Santa Cruz, Day of: Rain-making ceremony **743,** 748-749, 750
Santa Gertrudis (cattle breed): Development of 499
Santa Luisa (archaeological site), Mexico 205, 213, 214; Aerial view **218-219;** Burials 217, 219; Figurines, clay **217;** Irrigation system 205, 217, **218-219**
Santa Luisa Ranch, Veracruz, Mexico 213
Santés García, Marcelino, and family **230, 231**
Santos, Lucia dos 833, **839**
Sara al-Faisal, Princess (Saudi Arabia) 318-319
Sardine fishery: Portugal 806, 809, 824
Sargassum, Japanese **412-413**
Sarmientos, Margarito 738
Sassoon, Sir Victor 22-23

Satellite photography *see* Imagery, satellite
Saud, House of: ***Saudi Arabia: The Kingdom and Its Power.*** By Robert Azzi. Sept., 286-333
Saud al-Faisal, Prince (Saudi Arabia) 297, 322
Saud ibn Abdulaziz, King (Saudi Arabia) 301, 322
Saudi Arabia 343-344; ***Saudi Arabia: The Kingdom and Its Power.*** By Robert Azzi. Sept., 286-333
Bedouin: Traditions and changes 286, **290-291,** 291, 314-315, 332, **333**
Business, international 286, 315, 319, 331; Sanctions 305, 327
Capital *see* Riyadh
Defense 296, **300-301,** 301, 319, 327, 330
Development projects 291, 297, **298,** 303, 315, 327, 330, 332; Budget 286, 319
Economy 302-303, 323
Education 319, 328; Shias 298; Study abroad 286, 297, 305, 318, 319; Universities; colleges 296, 318; Women, education of 298, 318, 326
Emblem **300**
Flag **323**
Geography 296, 305
Government: Bases of 286, 297, 323, 332; *see also* Royal family, *below*
History 295, 301, 314, 322, 323
Imports 314, 315
Labor force, foreign 286, 298, 319, 327, 328
Minority-group rebellion 298, 313
Penal code 298, 332
Royal family 295; Family tree 322; *majlises* (audiences) 286, **294-295,** 297, 304, 314, 324, **324-325;** Succession 301, 323, 332
Standard of living 305, 314-315
United States and 296, 297, 298, 301, 305, 319, 327, 330
Women 318-319, 326, 332; Veiling of 286, 318-319, 326
Sault, Bill and Kitty 678
Saunders, Glenn 169, 172
Sauternes: Château d'Yquem 242, 248; Grapes used in 242, 248
Scaffolding, bamboo 509, **512-513;** Rigging of **511**
Scammell, Dave 590
Scandinavian immigrants: Minnesota 667, 674; Heritage celebrations 677
Schlecht, Richard, artist: ***Man's Eighty Centuries in Veracruz.*** Aug., 203-231
Schliemann, Heinrich 114
Schofield, Carl 168
Scollay, Clive: ***Arnhem Land Aboriginals Cling to Dreamtime.*** Nov., 644-663
Scorpion **699**
Scotch-Irish settlement: Maine 401, 406
Scout's Rest Ranch, Nebr. 58
Sculling: Midshipmen **459**
Sculpture: Pompidou Center, Paris **472-474;** *see also* Relief
Sea hares 416, 418, 422
Sea Island (superport), Persian Gulf **302-303**
Sea otters 131; Treaty protecting (1911) 131
Sea urchins **411,** 418
Seaweed *see* Kelp
Sedimentation; siltation: Chesapeake Bay system 438, 439, 446, 453, 467, ecological impact 438, 453, industrial harbors 456, proposed remedy 438, sources 438, 446, 453; Lake Powell, Ariz.–Utah 803
Segal, George: Sculpture by **473**
Seine (river), France: Aerial view **470-471**
Selous Game Reserve, Tanzania: Elephants 594; Killing of bull **570,** 571
Senegal: Elephants remaining 579, 602, protection of 578, 602; Ivory trade, illegal 602; National park system, quality of 602
Senghor, Léopold 602
Sequeira, Joaquim 822, 824
Serengeti Plain, Tanzania: ***Jackals of the Serengeti.*** By Patricia D. Moehlman. Dec., 840-850
Sese Islands, Uganda *see* Bukasa Island
Settlement mounds, prehistoric: Bulgaria 114, 117, **118,** 121
Severin, Floyd 52
Severn River, Md. **458**
Sevlievo, Bulgaria 125
Sewage discharge: Chesapeake Bay system 440, 446; Shellfish, impact on 447, 448, 449
Sewage treatment 440, 446, 447, 449
Shad, Chesapeake: Decline in 446, 447; Revenue (1979) 446
Shah, S. A. 525
Shanghai, China: ***Shanghai: Born-again Giant.*** By Mike Edwards. July, 2-43
Aerial views **16-17, 28-29**
Air-raid shelters 26
Child care 22, 26
Church, interdenominational **8-9,** 33
Consumer goods 18, 24, **24-25,** 26, 39, 41, **41;** Shortages 24, 39, 41
Film making 30, 32
Harbor **10-11,** 21, **21**
History 15, 18, 19, 20, 36, 43; Cultural Revolution death toll 32; Former foreign settlements 18-19, 34, map 20; Japanese occupation 20, 33, 34
Housing 24, 26, 27, 29, 33, 39; Apartment **27**
Industry: Factories, number of 15; Production 18, 22; Shipbuilding **4-5,** 22; Steel mills 18, 21, factory construction **12-13,** 43; Truck factory 36-37; Women workers 21, 22, 27, 39, 43
Library **36-37,** 37
Map 20
Medicine 28-30, **31**
Name meaning 18
Population 2, 15
Protestors 19, **22-23**
Sports and games **35**
Stores and shops 23, 24, **24-25,** 39, **40-41**
Streets **2-3,** 15, **18-19,** 21, 23, **34-35;** Alleyways 19, **42**
Transportation **18-19,** 19, 22, 37, 43; Bicycles **18, 19,** 23, 24, **35**
Unemployment 19, 22
Shao Ming 39
Sharia law: Islam 332
Sharks: California waters 422, **422,** 423, 426
Shell, racing **459**
Shell necklaces (artifacts): Bulgaria **119, 120**
Shellfish industry: ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467
Shia Muslims: Iran 297, **313;** Iraq **345;** Saudi Arabia 298, 313
Shield, Aztec **743**
Shih Fangyu 30
Shipka Memorial Church, Bulgaria 106; Domes **106-107**
Shipyards: China **4-5,** 22; Portugal 830
Shkodër, Albania **530-531,** 554, 557; Atheism Museum 553; Earthquake (1979) 545
Shrimp, red rock **424-425**
Sichuan (Szechwan) Province, China: Panda deaths 511
Sierra de San Francisco (mountains), Baja California **694-695,** 698
Sierra Nevada (mountains), Calif. **268-269**
Silver and gold objects, Thracian 125, **128,** *cover*
Silver-backed jackals: ***Jackals of the Serengeti.*** By Patricia D. Moehlman. Dec., 840-850
Diet 842-843, 846; Grass rats **842, 843,** 846
Family structure: Helpers 842, 846, **846, 847,** correlation to pup survival 846, 849
Greetings 846, 850
Habitat 843, 849
Litter size 846
Monogamous relationships 850
Range 843
Scavenging 842, **844**
Size 843
Territory: Defense of **844-845,** 846, 850; Size 846
Weight 849
Whelping season 844
Simpson, Robert H. 352
Simpson, Wallis 629
Sims, Mike 369
Sinarundinaria nitida (bamboo) 511
Sines, Cape, Portugal: Superport 830

Singleton, Jimmy 654, 655, 663
Sinocalamus affinis (bamboo): Medicinal use 515
Sintra, Portugal: Palace **828**
Sioux Indians: Fort Laramie, Nebraska Territory **62**
Skanderbeg (Albanian hero) 543, 553
Skanderbeg Square, Tirana, Albania 543, 544
Skateboard contestant **669**
Skidmore, Owings & Merrill (architects): Saudi airport terminal designed by 296, **299**
Skipjacks: Oyster dredging 448, **465**
Skull: Human-sacrifice relic **772**
Skull, crystal **749**
Skulls, plastic: Talismans **748-749**
Slade, Joseph Alfred "Jack" 58-59
Slugs **284, 560;** Eggs **280**
Slurry pipelines: Coal transport (proposed) 778, 784, 787, 788; Pulp 386, 395, 403
Smith, Capt. John 431
Smith, Ruth **464**
Smith Hotel, Seneca, Kans.: Pony Express station 52
Smith Island, Md. 461, **462-463;** Population 463; Shoreline erosion 463, 466; Waterman tradition 461, 463; Watermen 461, **462,** 464
Smith Point, Va.: Oil spill off (1976) 460
Smuggling, ivory 585, 594, 599, 602
Snails **281,** 563, **564,** 566; Marine snails *(Norrisia norrisi)* **425**
Snakes: Aztec symbol 718, **719,** 720, **721, 736-737;** Chinese folk medicine **31**
Snelling, Josiah 667
Soccer game: European Cup game: Albania 533
Socialists: Milwaukee, Wis. 183, 197
Sofia, Bulgaria 96, 102; Cathedral **100, 101,** 102-103; Music conservatory 98; Parades **94-95,** 96; Streetcars **98-99**
Soiso, Mofo 132, 134, 136, 138
Sokolnicki, Alfred 192
Solar energy: Groundwater reservoir 161; Use of: Honeywell, Minneapolis, Minn. 682, radiophone: Saudi Arabia **333**
Solís, Felipe **721**
Solome (Ugandan) 75, **79, 80,** 83, 86, 87, **87,** 88
Somalis: Ivory poaching 585
Sorceress: Mexico 714, **715,** 717, 751
Sosa, Marcelino **720**
South Africa: Elephants 590-591; Forest herd 590-591; Management of 578, 590, 591; Number of 579, 590
South America: ***The Gauchos, Last of a Breed.*** By Robert Laxalt. Oct., 478-501; Otter, giant Brazilian: Former range (map) 135, vanishing species 131, 135
South Pass, Wyo. 57, 61
Sow bugs **272, 280-281,** 283
Spa Creek, Md. **458-459**
Spanish conquest: Mexico 204, 205, 225-226; Aztec Mexico 718, 732, 753, 759, 761, 764, 765, 775; First Spanish town (Veracruz) 204, 205; Treasure taken, some of earliest **214, 215,** 225
Sparrow, fox **560**
Spawning grounds: Chesapeake Bay system 440, 446, 453; Map 439-441
Spider, jumping **564;** Leaping ability 564
Spiegel, Ted, photographer: ***Our Most Precious Resource: Water.*** Aug., 144-179
Spirolina (alga) **727;** Mexican export 727
Spores, moss **559**
Springtails **276, 277,** 279, 280-282, **281,** 563
Spruce, dwarf **561**
Square bamboo **521**
Squid 411; Egg capsules **410,** 411, **411,** 414, 419
Squirrel, red **561**
Staehle, Roger W. 688
Stanfield, James L., photographer: ***Ancient Bulgaria's Golden Treasures.*** July, 112-129; ***The Bulgarians.*** July, 91-111; ***Royal House for Dolls.*** Nov., 632-643; ***Windsor Castle.*** Nov., 604-631
Stara Zagora, Bulgaria: Stone Age ruins **120-121,** 121
Statuary, cemetery: Acid-rain corrosion **160**
Steel mills: China 18, 21; Factory construction **12-13,** 43
Stiles, Neville 738
Stone Age: Bulgaria 117; Artifacts **119, 120-121**
Stone of the Fifth Sun (Aztec calendar stone) **757-758,** 759, 770; Key **759**
Storm surges *see* Hurricanes
Strip mining: Farmington, N. Mex.: Land reclamation following **782-783,** 791
Strip mining, proposed *see* Allen-Warner Valley Energy System
Strommen, Eugene 690
Stroud, Johnson and Rose 200, 201
Struma Valley, Bulgaria 93, 97, 104
Subsidence 146-147, 148; California **171,** 174; Texas **146-147**
Sui River, and region, China: Bamboo **506-507,** 507-510
Sullivan, Thelma 731, 732
Sultan, Prince (Saudi Arabia) 304, **321,** 322
Sultan (Pakistani) 296
Summerfest: Milwaukee, Wis. **192-193**
Sun Temple, Malinalco, Mexico 750
Sun Zhongshan 21
Sunni Islam 298, 344; Wahhabism 313
Superports: Portugal 830; Sea Island, Persian Gulf **302-303**
Supertankers: Persian Gulf **302-303**
Surgery, Chinese: Acupuncture 28; Digit-reattachment surgery 28-30
Suriname: ***Giant Otters: "Big Water Dogs" in Peril.*** By Nicole Duplaix. July, 130-142
Survival of species: Theories: Evolutionary theory, earlier 849; "kin selection" theory 846, 849
Suspension bridges: Antecedents 516
Susquehanna (river), U. S.: Chesapeake Bay, effects on: Flooding (1972) 448; Fresh-water supply 446, 448; Radioactive-contamination threat 461
Suzhou Creek, Shanghai, China **16-17,** 21
Sweazy, Robert 159
Swords, bamboo **502-503,** *cover*
Symbiosis: Lichens 565
Symington, Michael 824
Szechwan Province, China *see* Sichuan
Szymczak, Casimir "Casey" **182**

T

Tabasheer: Medicinal use 515-516
Tagus River, Portugal–Spain 810, **811**
Tahoe, Lake, Calif.-Nev.: Eutrophication research **152-153**
Tai forest (primary forest), Ivory Coast: Destruction of 601
tai ji quan (slow-motion exercise) **7,** 23
Taiwan: Bamboo-products commerce **508, 518-519**
A Tale of Twin Cities: Minneapolis and St. Paul. By Thomas J. Abercrombie. Nov., 665-691
Tampa Bay, Fla. **374-375;** Hurricane (1921) 375; Hurricane-disaster potential 374-375, 378
Tangier Island, Va.: Erosion 466; Waterman tradition 461
Tanner, Steve 689
Tanzania: ***Africa's Elephants: Can They Survive?*** By Oria Douglas-Hamilton. Nov., 568-603; Ugandan liberation (1979) 74, 77, soldier **77;** *see also* Serengeti Plain
Tapestries, Gobelin: Windsor Castle **618**
Tar sands: Utah 778, 783
Tartan Park, St. Paul, Minn. 682, 688
Tashkent, Uzbek S.S.R. 338
Tate, Billy 64
Taverns: Milwaukee, Wis. 193-194, **198-199**
Taylor, Adrien 795
Taylor, Bobby 372
Taylor, Helen **430**
Taylor, Walter R. 446, 447
Tea, herbal: Maté 478, 490, 491, 501

Tea stick bamboo (tonkin cane) **506-507,** 507, 508, 509, 510
Tecolutla, Mexico 205
Tecolutla River, Mexico: Aerial view **218-219**
Telegraph, first transcontinental: United States 53, 66, 70-71; Construction crews 71
Television series, NGS (1981 programs): "Etosha: Place of Dry Water" (January); "Gorilla" (April); "Living Treasures of Japan" (February); "National Parks: Playground or Paradise" (March) 703
Temples, Pre-Columbian *see* Aztecs; El Tajín
Tenayuca, Mexico: Stone 761
Tennant, Bobo 448
Tennessee (river), U. S.: Damming 148, 150, 175
Tennessee Valley Authority 150, 175
Tenochtitlan (Aztec capital): ***The Aztecs.*** Dec., 704-775: I. ***The Aztecs.*** By Bart McDowell. 714-751; II. ***The Building of Tenochtitlan.*** By Augusto F. Molina Montes. 753-765; III. ***New Finds in the Great Temple.*** By Eduardo Matos Moctezuma. 767-775; IV. ***Visitor's Guide to the Aztec World*** (supplement)
Architecture 753, **754-756,** 760-761; Construction techniques 760-761; *see also* Great Temple of Tenochtitlan, *outlined*
Causeways 753, 760
City plan (1628) **716**
"flowery wars" **740-741**
Founding 716, 726, 732, 753
Patron god **763**
Population 731
Portrayal, Aztec **752**
Temples **754-756,** 756 *see also* Great Temple of Tenochtitlan, *outlined*
Tents, fiberglass: Saudi Arabia 296, **299**
Teodori, Jorgo 545
Teodori, Kristo 545
Teton Dam, Idaho: Failure 175
Texas: Farmland, fallow 159, **172-173;** Hurricanes 346, 352, 353, 361; Subsidence **146-147,** 148
Texcoco, Mexico 726, 732, 735
Texcoco, Lake, Mexico 716, 730, 732, 735, 738; Aztec Mexico **717,** 723, 732, 735, 738, dam project 727, 738; Dikes **726-727;** Salt 727, 734, 751
Tezcatlipoca (Aztec deity) 756, 762
Theater movement: Minneapolis and St. Paul, Minn. 677
Thorne, Robert J. 466
Thracians 112, 117, 125, 127; Goldwork 125, **128,** 129, **129,** *cover;* Tombs 125, **126-127**
Three Mile Island, Pa.: Nuclear power plant accident 460-461
Ticaboo, Utah 783, **790-791**
Tides, hurricane *see* Hurricanes: Storm surges
Tihamah (plain), Saudi Arabia 319
Tiko (Ugandan) **77**
Tiles (azulejos): Porto, Portugal **816-817**
Tirana, Albania 543, 544, **546,** 551, 557; Soccer game 533, spectators **534-535;** Population 544; State University 546, 551
Tlatelolco (Aztec city) 764; Market, painting of **728-729;** Pyramid 764, **764-765;** Spanish conquest 764, 765
Toad, American **560**
Tobacco farming: Bulgaria 92, 93, 95, 97, 103-104; Chesapeake Bay region 445
Tobacco leaves **444**
Toilets: Flush mechanisms, invention of 162
Toltecs: Aztecs and 713, 723; Pyramid **712-713**
Toma, Mark 544
Tombs, excavated: ***Ancient Bulgaria's Golden Treasures.*** By Colin Renfrew. July, 112-129
Tonkin cane *see* Tea stick bamboo
Tools, prehistoric: Copper 112, 117, 121; Flint 112
Tornadoes, hurricane-spawned 346, 351, 352, 361
Tortoise shell bamboo 516, **517, 521**
Tosks: Albania 553
Totonac Indians: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231
Town Creek, Md.: Pollution 448
Toxic wastes **154-155,** 166; Microwave detoxification system **155;** *see also* Chesapeake Bay system: Pollution
Trade winds, easterly: Hurricanes and 361, 363, 364, 371
Traffic (Chinese truck) 36-37
Trailer towns: Utah 783, **790-791**
Transcontinental balloon flight: **Kitty Hawk** ***Floats Across North America.*** By Maxie and Kristian Anderson. Aug., 260-271
Trapper Mine, Colo. **783,** 791
Trás os Montes (region), Portugal 822
Tred Avon River, Md.: Pollution 448; Tributary **454-455**
Tropical storms: Agnes (1972) 361, flooding 448, shellfish losses 448; Wind-speed classification 369, 371
Trout fry **153;** Pollution-affected **153**
Truck factory: Shanghai, China 37
Tsavo National Park, Kenya **600;** Elephants 585, 587, **600,** protection of 585, 598, slaughter of (pre-1978 poaching) 585; Ivory, confiscated 585, **598-599**
Tucson, Ariz.: Suburbs: Aerial view **178**
Tug-of-war (game): China **35**
Tula, Mexico: Aztecs 723; Toltecs 713, 723, 762, pyramid **712-713**
Tunov, Atanas 97, 100, 103, 104, 109
Tunov, Ginka and Ilia 104, 109
Tunov, Nikola 91, 96, 109
Tunov, Tsvetanka 104
Tunov, Vangalia **90,** 97, 100, 103, 104
Turk, John 168
Turkeys **230**
Turquoise: Aztec artifacts **736-737**
Twain, Mark: Pony Express (excerpts from *Roughing It*) 45, 58-59
Tweedie, Penny, photographer: ***Arnhem Land Aboriginals Cling to Dreamtime.*** Nov., 644-663
Twin Cities, Minn.: ***Minneapolis and St. Paul.*** By Thomas J. Abercrombie. Nov., 665-691
Area 678
Colleges; universities 688-689
Contrasts, intercity 665, 666, 691
Grain center 667, 674, **676**
Growth 666
Indian residents 679; Cultural integration efforts 674-675, 677; Number of 674
Industry; commerce 666, 674; Science-oriented 682, 688
Map 667
Population 667; Growth rate 666, 674
Quality-of-life rating 666
Recreation 677-678, **680-681, 687, 690-691**
Settlers 666, 667, 670, 674
Urban renewal 677, 678, 679
Winters 689; Coping with cold 666, **680-681,** 688, 689-690, 691
see also Minneapolis, *outlined*; St. Paul, *outlined*
Two Centuries of Conflict in the Middle East; Mideast in Turmoil. Sept. supplement
Tylerton, Md. 461, **462-463**
Typhoid fever 152; 1900 epidemic 152

U

Ueda, Koichiro 516, **517,** 522
Uganda:
Elephant slaughter 578, 580, **580-581,** 584, 603; Complicity of government officials 584; Number surviving 578, 579, 584; Weapons used, 578, 580, 584
National park rangers, plight of 578, **580,** 584
Return to Uganda. By Jerry and Sarah Kambites. July, 73-89
Black market 77
British rule 78, 83-84
Capital *see* Kampala
Crime and violence 74, 75, 76, 77, 80, 86
Dictatorship 73, 75, 84; End of 73, 74, 84
Government, present-day 74,

84
Independence (1962) 75, 76, 84
Linguistic groups: 75, 83, 84; Map 75
Map 75
Medicine and health 80; Medical care 76, 77, 80, **80**
Monarchy abolished 79, 83, 84
Religion 75, 83, 84; Greek Orthodox Church 75, 83, bishop 76, **82**
Tanzanian liberators 74, 77, **77**
Tribes 75, 84; Linguistic groups: Map 75; *see also* Baganda, *outlined*
Uganda-Tanzania war (1979) 74, 77; Elephant slaughter by soldiers 578, 584
Umbrella bamboo 518
Underground Space Center, University of Minnesota 688
Undersea World of a Kelp Forest. By Sylvia A. Earle. Sept., 411-426
Union of Soviet Socialist Republics: Afghanistan, invasion of 285, 335, 336, 338, 344; Albania, former relations with 530, 544, 545, 552; Bulgaria: Linguistic similarities 96, relations with 96, 104, trade with 96, 98; Chinese border 26; Chrome 545; Middle East involvement 285; Muslim population 338-339, 344
United States: Arab-Israeli conflict and 297, 305, 330; Beef imports 490; ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803; ***Hurricane!*** By Ben Funk. Sept., 346-379; Immigrants (1800s) 185, 187, 192, 401; Indian wars 45, 61, 64-65, 70, 71; Ivory imports, limitation on 585; Ivory-trade investigations 585, 594; Middle East embassies: Attacks on 335, 344; ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179; Population shift 373; Saudi Arabia and 296, 297, 298, 301, 305, 319, 327, 330; Telegraph, first transcontinental 53, 66, 70-71; *see also* Westward Movement
United States–Canada border *see* Madawaska (region)
U. S. Army Corps of Engineers: Chesapeake Bay studies 447, 463, 466, 467; Dam-inspection program 165, 175; Erosion tests **167;** Passaic River Basin flood-control plan 166; Saudi Arabia 301; Water projects 175
U. S. Bureau of Land Management 779, 782, 784, 796, 797, 800
U. S. Bureau of Reclamation: First projects 169
United States Congress: African-elephant hearings 585; Water-control acts 163, 169, 175
U. S. Department of the Interior: Allen-Warner Valley project 779, 781, 785, 795, 796, 803; Office of Surface Mining 779, 790, 791; *see also* U. S. Bureau of Land Management
U. S. Fish and Wildlife Service: Endangered species, protection of 788
U. S. Immigration office, Madawaska, Maine **389**
U. S. National Park Service: Air pollution monitoring: Utah parks **781,** 782, 795, **795,** 798
U. S. Naval Academy, Annapolis, Md. **458;** Women midshipmen 459, **459**
University of California at Davis: Lake Tahoe study **152-153**
University of Maryland: Center for Environmental and Estuarine Studies: Chesapeake Bay studies 447, 448, 453; Oyster research 448, 449
University of Minnesota: Institute of Technology 688
University of Southern California: Study grant 414
Upper Frenchville, Maine 380, 386, 388
Upson, Warren 66
Uranium deposits: Australia 650, 651, 652; United States: Map 778-779; Utah 779, 784, mining 783, 790, prospecting 786
Uranium mills: Utah parklands area 783; Air pollution 783, 793, **794,** 795
Urban development and renewal: Jerusalem 341; Milwaukee, Wis. 187, **187,** 197, 200-201; ***Minneapolis and St. Paul.*** By Thomas J. Abercrombie. Nov., 665-691
Uruguay: Gauchos 493
Usinger, Frederick 195
Utah: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803; Irrigation technology, pioneered 169
Utah International Inc.: Coal mine operations 783, 784, 788, 791; General Electric affiliate 785; Land reclamation **782-783**
Utah Power and Light 800
Utah Territory: Indian wars 45, 64

V

Valdezar, Jorge 750-751
Valley of Roses, Bulgaria 103, 104, 106, **106-107**
Vaqarri, Hysen 545
vaqueros (Paraguayan cowhands) 493, **494-495, 499**
Varjona (gaucho) 478, 482, 485, 486
Varna, Bulgaria: Gold artifacts 112, **112-115,** 114, 122-123, 129
Varsiana Xicumetl, María: Funeral 745, **747**
Vase, bamboo-covered **527**
Vásquez, Guadalupe **722**
Vendettas: Albanian custom, former 537, 540, 556
Venedikov, I. 125, 129
Veracruz (city), Mexico 204, 205, 225, **228-229;** Founding; original site 204, 205; Second site 205; Third site 205
Veracruz (state), Mexico: ***Man's Eighty Centuries in Veracruz.*** By S. Jeffrey K. Wilkerson. Aug., 203-231
Archaeological sites 213-214; Map 205; *see also* El Tajín, *outlined*
Capital *see* Jalapa
Cattle 205, 213, 226, **226-227**
Economy 204, 228 *see also* Oil, *below*
Farms and farming **202,** 216, 226; Crops 214, 226
Folk music 204, 226, 231
Governor *see* Hernández Ochoa, Rafael
History 204, 205, 231; Colonial 204, 205, 214, 225-226; Pre-Columbian *see* El Tajín, *outlined*
Immigrants 205, 213, 226, 227
Indians 226, 228-229, 231, **231;** Dress, traditional **224,** 229, **229, 230;** Families **229, 230;** Traditions 229, 231
Maps 205; Pre-Columbian Indian map **203**
Natural gas 204, 226; Pipeline 226, 228
Oil 204, 205, 226; Refinery 205, welder **231;** Reserves 205
Spanish treasure, recovered **214, 215,** 220, 225
Vermont *see* Wheeler Mountain
Vessels, Jane: ***Fátima: Beacon for Portugal's Faithful.*** Dec., 832-839
Viatte, Germain 474
Victoria, Queen (Great Britain) 611, 614, 615, 623, 628, 631
Victoria, Lake, Africa 74, 83, **85,** 86
Victorian architecture, domestic **683**
Vjosë, River, Albania-Greece **540-541**
Villa Santa, Estancia, Paraguay **494-495**
Villeréal, France 239
Vineyards: Bordeaux (region), France **244-245,** workers **240, 242,** 247, 249; Douro (region), Portugal 815, 818, **820-821,** 822
Vintners: ***Bordeaux: Fine Wines and Fiery Gascons.*** By William Davenport. Aug., 233-259
Violette, Claudette Paradis 388
Virginia: Erosion: Chesapeake shoreline; islands 466, 467; Oyster yield, decrease in (1950s) 447, 449, 452; Port complex, Chesapeake 441, 447, 460, proposed-oil refinery controversy 460; View from space **436-438**
Virginia Institute of Marine Science (VIMS) 449, 453
Virginia Water Project 156

Visitor's Guide to the Aztec World; Mexico and Central America. Dec. supplement
voladores (aerial performers) **209, 212,** 213, 231, 750, Sept. *cover;* Falls 750-751; Pole-raising rite 751
Volcanic rocks: Pigment source, primitive-art 694, 701, **701**
Vratsa, Bulgaria: Thracian grave mound 125; Artifacts **128, 129**
Vulchitrun, Bulgaria: Gold artifacts 123-124, 125
Vultures **850**

W

Waddell, William B. **47,** 51
Wagner, Peter E. 447, 453
Wahhabism: Saudi Arabia 313
Waitsap, China *see* Huaiji
Walker's Point: Milwaukee, Wis., settlement (1830s) 186, 187; Map 185
Walt Disney World, Fla. **158-159;** Water-filtration system 159
Wang Lanhua 33
Wang Meijuan 36
Wankie National Park, Zimbabwe: Elephant management 585, 588-590, **596-597**
Ward, Fred: ***Dominica.*** Sept., 357-359
Ward, Neal and Sharon 198
Warner Valley power plant, proposed *see* Allen-Warner Valley Energy System
Warren, Wilma 156
Washington, D. C.: Sewage treatment 460
Washington Suburban Sanitary Commission (Maryland): Water conservation 179
Waste-disposal problems: Dredging 456; Toxic wastes 155, 166, 453, 456
Water 143; United States: ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179
Agricultural consumption 144, 150, 151, 158
Aquifers 158-159, 161; Chemical pollution 170; Map 150-151
Chlorination 152, 166
Cost per ton (city water) 144
Daily consumption: Diagrams **150, 151;** Per person 144; *see also* Agricultural consumption, *above;* Industrial consumption, *below*
Distribution of: East and West *see* Maps, *below*
Drinking water: Contaminated: Rural areas 152, 156; Treatment *see below*
Fluoridation 152
Groundwater: Contamination 170; Depletion 146-147, 148, 151, 158-159, 160-161, 171, 174; Solar energy reservoir 161
Human requirements 144, 148
Hydrologic cycle 148, 168
Industrial consumption 148, 150, 151
Maps: East and West water regions 150-151
Properties 148, 172
Recreational use **157-159,** 159, 175
Recycling 148, 179; Home system **149**
Treatment 152, 156; Carbon filtration systems 166, cost 166, 168; Home treatment plant **149;** Vegetation filtering 159
Water bear (invertebrate) 565
Water cleanup: 1900s 152; *see also* Erie, Lake
Water controversy: Utah: Miners vs. ranchers 778, 784, 785, 787-788, 790, 791, 796
Water diversion: Aztecs 727, 735, 738; ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179
Water management 148; Eastern United States 151, diagram **151;** Western United States 150, diagram **150;** *see also* Colorado River; *and* Dam construction; Flood control
Water mining 160-161
Water pollution: Agricultural runoff 163, 166, 170; Human wastes 156, 162; Industry 166, toxic wastes **154,** 155, 166; Mexico 738; ***My Chesapeake—Queen of Bays.*** By Allan C. Fisher, Jr. Oct., 428-467; *see also* Acid rain; Eutrophication; Pesticides
Water Pollution Control Act (1972) 151, 163
Water-pollution controls: Bethlehem Steel cleanup 456, 460
Water table: Defined 158
Waterborne diseases: Annual deaths 144
Waterfowl: Chesapeake Bay region 431, 438, 489, **442-443,** 446; Oil-spill casualties (1976) 460
Watermen: Chesapeake Bay region 447, 448, **451,** 452-453, 461, **462,** 464
Watkins Dam, Utah: Length 175
Wax images (votive offerings): Fátima, Portugal **832-833, 839**
Way of the Jackal. By Patricia D. Moehlman. Dec., 840-850
Weapons: *facón* (gaucho knife) 482, **482,** 486, 490, 491; *see also* Firearms
Weather satellites: Hurricane monitoring; tracking 357, 361, 365, 368, **369**
Weaver, Charles 678
Weaving: Aboriginals 651, 655; Mexico **722**
Webster, Dwight 168
Webster-Ashburton Treaty (1842) 387, 397
Wells, water: California drillings (1976-1977) 174; Contaminated: Rural areas 152, 156; Drilling rigs 170; Natural-gas reservoirs and 144, flaming spigot **145**
Werley, Fred 368, **368,** 369
West, U. S.: ***Coal vs. Parklands.*** By François Leydet. Dec., 776-803; ***Our Most Precious Resource: Water.*** By Thomas Y. Canby. Aug., 144-179; ***The Pony Express.*** By Rowe Findley. July, 45-71
West Bank (Israeli-occupied Jordan): Jewish settlements 335, 341
West Indies *see* Dominica; Dominican Republic
West Virginia: Clean water shortage 152, 156; Dam failure 175
Westermeier, "Herr Doktor" 689
Westward Movement 46, 55, 56-57; Immigrant trails 47, 51, 56-57, 59, 61; Scandinavians 667, 674
Wetlands: Chesapeake Bay regions 431, 438, 440; Map 439-441
Wheeler Mountain, Vt.: ***Life on a Rock Ledge.*** By William H. Amos. Oct., 558-566
Whisk, bamboo **526**
White, Gilbert F. 174-175
The Wild World of Compost. By Cecil E. Johnson. Aug., 273-284
Wildlife *see* Elephants; Giant Brazilian otters; Jackals
Wildlife management: Elephants: South Africa 590, 591; Zimbabwe 585, 588-590, **596-597**
Wildlife park, proposed: Pigs Eye Island, Minn. 689
Wildlife-products ban: Kenya 585
Wilkerson, S. Jeffrey K.: ***Man's Eighty Centuries in Veracruz.*** Aug., 203-231
William I, King (England): Windsor Castle construction 605-606, 611
William IV, King (Great Britain): Death chamber 615
William and Mary, College of: Virginia Institute of Marine Science 453; Oyster study 449
Wilson, Charley **60,** 61
Wilson, Elijah Nicholas "Nick" 45, 61, **61,** 64
Wilson, Sir Harold 628
Wilson, Kim **790**
Windlesora (Anglo-Saxon settlement), England 611
Windsor, Duke and Duchess of 629
Windsor, House of: ***Windsor Castle.*** By Anthony Holden. Nov., 604-631
Windsor Castle, England: ***Windsor Castle.*** By Anthony Holden. Nov., 604-631; *see also* Queen's Dolls' House
Windsor Great Park, Windsor, England 610, 614, 626, 628, 629
Wine cellar: Château Lafite-Rothschild, Bordeaux (region), France 248, **250**
Wine Creek, N. Y.: Chemical pollution 166

Winegrowing; wines:
Bordeaux: Fine Wines and Fiery Gascons. By William Davenport. Aug., 233-259
Classification systems 246, 251; Regional classification 238
Grape culture 233, 242, 248; Antiquity of 233, 240; Mold, beneficial **242,** 248; Varieties cultivated **233,** 240, 248, cloning 242; Vines, average age of 249
Harvest **240, 242,** 248; Rituals **243,** 256
Irrigation prohibition 249
Production figures 238, 246, 247, 248
Revenue from 233, 244, 248
Sauternes: Grapes used in making **233,** 248
Tasting **242,** 246, **246**
Vineyards **233, 240, 242, 244-245,** 247; Workers **240, 242,** 247, 249, work ethics 247, 249
Vintners 241, 242, 246, **246-247,** 248, 249, **250**
Weather factor 240, 248
Bulgaria 95, 97
Portugal 818, 821, 824; Grape-pressing method **808-809,** 822, 824; Vineyards 815, 818, **820-821,** 822
Winston, Allandale and Delia 357
Winter Carnival, St. Paul, Minn. **680,** 690
Winterfest: Minneapolis, Minn. **680-681**
Wisconsin *see* Milwaukee
Wolinsky, Cary, photographer: ***Madawaska: Down East With a French Accent.*** Sept., 380-409
Wolman, Abel 152
Women midshipmen 459, **459**
Women laborers: Building trades: Milwaukee, Wis. 200, 201
Women's rights: Saudi Arabia 318-319, 326, 332; Veiling 286, 318-319, 326
Wonga Wongué Reserve, Gabon: Elephants 591, 594
Wood carvings: Folk figures **393,** 394; Life-size carvings: Birds **392,** porcupine, white **392,** 394
Wood sorrel **560**
Woodcutters: Bulgaria 91, 96; Madawaska region, Canada–U. S. **385,** 394, 395
Woolfitt, Adam, photographer: ***Bordeaux: Fine Wines and Fiery Gascons.*** Aug., 233-259
World War I: Bulgaria 95
World War II: Bulgaria 91, 95; *see also* Albania
World Wildlife Fund: Address 578; Fund raising: Save-the-elephant campaign 578; Study grants 132, 578, 584
Worms: ***The Wild World of Compost.*** By Cecil E. Johnson. Aug., 273-284
Wu Yunfeng 37
Wu Zhaoguang 32-33
Wyatt, Wayne 159
Wyatville, Sir Jeffry: Windsor Castle remodeling 615, 616, 621, 623

X

Xochimilco, Mexico: "floating gardens" **724-725,** 738; Niños de Dios, blessing of **734-735;** Water pollution 738

Y

Yanbu, Saudi Arabia 327
Yang, Sally Yung 39, **39,** 43
Yangtze (river), China 18, 21, 43
Yankee Hill, Milwaukee, Wis. 187, 189
Yapeyú, Argentina 481
Yarn, handspinning of **554-555**
Yellow bamboo 509, 511
Yezzi, Jim 166
Yovimpa Point, Utah: View from 787, 791; Proposed strip mining and 787, 790, 803
Yquem, Château d', Bordeaux (region), France: Sauternes 242, 248
Yu Chungjia 28, 30
Yugoslavia: Albanian population 539, 549, 552
Yuma, Ariz.: Desalination plant 174
Yung family holdings: Nationalist China 43

Z

Zablocki, Clement 195
Zaire: Elephants **576-577;** Ivory-trade slaughter 571, 575, 594, complicity of government officials 594; Number remaining (1979) 579
Zaugg-Haglund, Alexandra 414, 426
Zebu cattle 213, 226, **226-227**
Zeidler, Frank **183,** 197
Zempoala, Mexico 205
Zhivkov, Todor 96, 100, 103
Zia, Z. S. 33
Zimbabwe: Elephants 585; Management of 578, 585, 588-590, **596-597;** Minefield casualties 590; Number of 579; Study of 590; Utilization of 588, 589-590, profits realized 588, 589-590
Zimmermann, H. Russell 189
Zion National Park, Utah 781, **798-799, 801;** Coal development adjacent to *see* Alton coalfield; Power plant near, proposed 779, 788, 798, 800
Zitlala, Mexico: Funeral 745, **747;** Rain-making ceremony 743, **743,** 748-749, 750, costumes **742, 743,** 749; Shaman **746, 747,** 748
Zócalo, Mexico City **771;** Archaeological finds 759, 770
Zog, King (Albania) 543
Zooplankton reproduction: Weather and (theory) 453
Zoos: Elephant supply 588, **597;** Minneapolis, Minn. 691

INDEXING STAFF

JOLENE M. BLOZIS *Editor*
MARTHA K. HIGHTOWER *Assistant Editor*
JEFFREY A. BROWN
GEORGE I. BURNESTON, III
M. KATHLEEN HOGAN
ANNE K. McCAIN
BRIT A. PETERSON
SARAH K. WERKHEISER